# FEEDSTUFFS

★ A WEEKLY NEWSPAPER ★

FOR THE FEED MANUFACTURER, JOBBER, BROKER and DEALER

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## USDA Designates 17 More Counties As Disaster Areas

WASHINGTON—Ezra Taft Benson, secretary of agriculture, this week designated 17 counties in three states as drouth disaster areas where eligible farmers and stockmen may participate in the emergency feed program.

The counties designated are:

Texas (13)—Blanco, Coke, Concho, Glasscock, Guadalupe, Hayes, Howard, Irion, Regan, Schleighter, Sterling, Tom Green, Upton.

Utah (3)—Garfield, Kane, Wayne.

Colorado (1)—Elbert county.

These designations bring to 91 the total number of counties in eight states so listed, as a result of either drouth or hurricane damage. These include: Colorado, 4; Kansas, 25; Nevada, 6; North Carolina, 10 (hurricanes); Oregon, 1; Texas, 34; Utah, 4, and Wyoming, 7.

Under provisions of the emergency feed program, eligible farmers and ranchers in designated areas may obtain certain feed grains or mixed feeds at a reduction in price. The program is designed to help farmers and ranchers in stricken areas to maintain basic herds of livestock.

### EMERGENCY SALES

**WASHINGTON—The U.S. Department of Agriculture reports that under the 1955 emergency feed program 27,997 farmer purchase orders were issued for 1,800,308 cwt. of approved grains and formula feeds as of Dec. 1.**

### FEEDSTUFFS FEATURES

**Many reports on new findings in animal nutrition research were given at the annual meeting of the American Society of Animal Production. The first of a series of articles summarizing the reports will be found on page 10.**


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## Meat-Feed Ratios Decline as Egg and Milk Ratios Improve

WASHINGTON — Commodity-feed price ratios for the month ending in mid-November were generally lower than a month earlier for hog and poultry meat but slightly improved for eggs and dairy products.

Plummeting hog prices sent the hog-corn ratio down more than for any other commodity, the U.S. Department of Agriculture reports in its current compilation of farm prices. The broiler-feed and the turkey-feed ratios dropped slightly while the farm chicken-feed ratio stabilized at the same level of a month earlier. The egg-feed ratio increased from mid-October as did the milk-feed and butterfat-feed ratios.

(Comparisons of the ratios by region are shown in the table on page 83.)

In mid-November, USDA reports, 100 lb. hog would buy 11.2 bu. corn. This compares with a ratio of 12.7 a month earlier and 13.5 a year earlier. Hog prices during the month were off $2.30 to average $12.20 cwt., the lowest since February, 1942.

The downtrend in the broiler-feed ratio continued, the USDA report shows. In mid-November 1 lb. broiler would buy 4.5 lb. feed, compared with a ratio of 4.6 in mid-October and 5.3 in September. In mid-November, 1954, the ratio was 3.9.

The turkey-feed ratio slipped also, dropping to 9 in mid-November. The ratio was 9.2 a month earlier, but 8.9 in September. A year earlier it was down to 7.6.

A downtrend in the egg-feed ratio was reversed when it went to 12.9 in November as compared with the 12.5 in October and 12.6 in September. A year earlier, a dozen eggs would buy 9 lb. of feed.

The milk-feed ratio went from 1.45 in mid-October to 1.51 in November, above the level of a year earlier when it was 1.36, and greater than the 1934-53 average of 1.27. The butterfat-feed ratio also went up, from 22 in October to 22.4 in mid-November. In November of 1954 it was 20.1.

Average prices for feed paid by

(Continued on page 89)

## Plans Set for Meeting On Medicated Feeds

### *Fire Destroys Farm Bureau Warehouse At Lansing, Mich.*

LANSING, MICH. — Fire, which started about 7 a.m. Dec. 9, destroyed the warehouse of Farm Bureau Services, with a loss estimated at around $750,000 to building and inventory.

Cause of the fire was not immediately determined, though it was reported to have started in the vicinity of the heating plant. No employees were present at the time the fire started.

Maynard D. Brownlee, manager, Lansing warehouse division, Farm Bureau Services, said the inventory consisted of about 50% various types of livestock and poultry feed and 50% miscellaneous farm supply items such as fencing, feeders, waterers, etc.

The Lansing warehouse served customers in central Michigan. Farm Bureau Services has five other warehouses in Michigan, and one or more of these will be called upon to service the Lansing territory.

While the fire was still smoldering, Mr. Brownlee announced that the warehouse would be rebuilt as soon as possible, with work likely to get under way within a week.

### *Fleet to Be Smaller*

BUFFALO — The winter fleet of lake freighters holding storage grain will be much smaller than last year. Grain men said there will only be about 40 ships in the winter fleet this year when the last freighter puts into port with storage grain this week.

A year ago, there were nearly 70 ships in the winter fleet, the largest number in five years.

### FDA Announces Symposium to Be Held Jan. 23-24

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—The Food & Drug Administration is undertaking a project to provide more information on medicated feeds and a better understanding of the problems in the manufacture, regulation and use of these increasingly important feeds.

FDA this week announced plans for a public two-day symposium on medicated feeds, to be held Jan. 23-24 in Washington. Arrangements are being made by FDA's veterinary medical branch.

The growth in the use of medicated feeds has created new problems for feed manufacturers, drug manufacturers and regulatory officials, FDA pointed out. To aid in solving these problems, the symposium in January has been scheduled.

In announcing the symposium, George P. Larrick, commissioner of food and drugs, noted that in the past five years, the practice of medicating feeds has become almost universal in the feed industry.

"Under the Federal Food, Drug and Cosmetic Act, medicated feeds are defined as both drugs and foods for animals," Mr. Larrick said. "As such, they are subject to both the safety and labeling requirements of the law. In consequence, feed manufacturers have become drug manufacturers with new problems which also affect their suppliers and control officials. We hope that this forthcoming symposium will promote better understanding of the problems in this fast-moving, highly technical field."

**Talks Scheduled**

Papers have already been scheduled on various phases of medicated feeds, including such topics as types of medicated feeds, federal and state regulations, manufacturing problems and the future of medicated feeds. Speakers will include authorities from the drug industry, feed industry and government agencies.

Behind the call of this meeting, it has been learned, is the fact that FDA senses some friction between itself and state regulatory bodies as well as an area of lack of information or misinformation among feed manufacturers, the drug industry and the position of FDA under its law.

It is hoped that the meeting in January will do much to clarify all positions and bring about an area of understanding whereby existing problems can be eased or eliminated.

One of the immediate issues to be considered at the meeting will be that of labeling of feeds containing drugs. This is an issue on which FDA has an inflexible current position, fixed by the law under which it operates.

For the feed manufacturer, it is a real problem since it subordinates

(Continued on page 85)

*With Dr. Gus' Help*

## Michigan Scientists Report Major Step in Dairy Nutrition Research

EAST LANSING, MICH.—Dr. Gus, a young Holstein steer at Michigan State University, is making history in the field of animal nutrition research.

With Dr. Gus' help has come the "biggest advance in dairy cattle nutrition research in the past quarter of a century," according to Dr. Carl F. Huffman and A. D. McGilliard of Michigan State.

The scientists now can analyze what happens to a dairy animal's feed after it is digested by the rumen and the other three stomachs. That's where Dr. Gus comes into the picture —he had an operation to make this possible.

Dr. Gabel H. Conner, an MSU veterinary surgeon, severed the animal's duodenum (the stomach's connection with the large intestine) and connected the two ends with plastic and steel tubes.

This allows the digested contents of the duodenum to follow the usual route but through a plastic tube exposed on Gus' outside. That's what caused some university visitors to call Gus "the stirrup steer," the plastic tube has the shape of a saddle stirrup.

**Can Get Digested Food**

The tube is designed so the researchers can disconnect it, get a portion of Gus' digested food and compare it with the material he ate.

Dr. Huffman says that the surgery, the first successful operation of its

(Continued on page 89)

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EDITORIAL STAFF—Harvey E. Yantis, Editor; Milton B. Kihlstrum, Managing Editor; Martin E. Newell, Paul L. Dittemore, Associate Editors; Roger Bergland, News Editor; George L. Gates, Market Editor; Frank W. Cooley, Jr., Emmet J. Hoffman, Editorial Assistants; L. E. McDonald, Research Director.

WASHINGTON REPRESENTATIVE—John Cipperly, 604 Hibbs Building, Washington, D. C., Telephone, Republic 7-8534.

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# Farming Changes

OUR Washington intellectual, Mr. John Cipperly, published some interesting observations in his Capital Comment department in Feedstuffs last week. He pointed to evidences that farming is undergoing a change that is similar to the industrial revolution which occurred in manufacturing fields within the past half century. The invention and use of machinery has resulted in the development of mass production of many lines of manufactured products on a highly efficient basis. Industries can pay steadily higher wages for fewer hours of work per week, and at the same time give the consumer better products for relatively few dollars.

Farming is pointing more and more toward similar goals. Mechanization, increasing use of plant foods and other agricultural chemicals, freezing and other forms of food preservation—all are making steady progress in our farming communities. All are aimed at more economical production with less work, just as the industrial revolution was aimed at those objectives. Better birds and animals, better feeds, seeds and management likewise work to this end.

Almost all of these devices for producing more farm products at lesser cost demand large scale operations to reach their greatest effectiveness. The factory-type farm has many economic and other competitive advantages over the small family unit which has dominated our farm plant in the past. Sentimentally this may be deplored, but the change probably is as inevitable as it was in the industrial revolution, when many fine independent business units were forced to expand, combine with others, or liquidate. The public demanded the improved products and lower costs, the workers demanded the shorter hours and higher pay, and the small family factory could not compete.

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A WRITER in the Christian Science Monitor had this to say recently: "Students of American life agree that the family farm is a most useful social institution. The contributions farming as a way of life has made to the moral and physical well-being of the nation are hard to over-estimate. But this is a diminishing crop. Today the number of Americans living on farms is less than three fourths the number only 15 years ago. Just since 1950 some 3 million people have left the land.

"The fact is that the industrial revolution has reached the farm. Mechanization is turning much of agriculture into a factory process. In general, it spells larger and larger farms, fewer and fewer farmers. The movement is not all loss. Economists believe it has made for efficiency and added manpower to the industrial labor force. Many ex-farmers have better clothes and their children more modern schools.

"But there have been losses, no less great for being intangible. Should a national farm program, then, aim at 'keeping 'em down on the farm'? Indirectly, many present legislative plans are geared to do that. Directly they aim to protect the small farmer from competition by the big, mechanized farm factories. The price-support measures, for instance, try to guarantee the marginal farmer prices above his cost of production. But often the factory farms can halve these costs.

"This means that the 'big fellows' get government payments which mean 100% profit in order for the little fellow to get enough to keep going. It also means that surpluses are piled on surpluses. More and more it begins to appear that price-support plans give most of the help where it isn't needed. So, although there is some agitation for still higher supports, many thoughtful farmers seek a better plan.

"How to find a means for helping the small family farm without a costly subsidy to the giant factory farm? One proposal calls for limiting the size of price-support payments to any farmer. This would cut bonuses to factory farms while still aiding the 'little fellow.' Another effort is to help farmers find more income sources outside the farm. Already people living on farms get about one fourth of their income elsewhere. Possibly the plan for withdrawing land from use in a 'soil bank' could be shaped to give special aid to the family farm.

"This general approach to farm problems deserves more attention. For it could save money now going into unnecessary subsidies to big surplus producers and at the same time help the family farm which produces the most important crop of all—farm people."

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THE growing trend toward larger units, high efficiency-low cost production, and specialization on the nation's farms has many implications for the feed business. Feed men cannot ignore the change, nor can they stubbornly refuse to alter their own methods of doing business, as and if the changes occur in farming. The coming years will demand close attention to what is happening in these matters, and ingenuity in meeting the new conditions.

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## Quote

FROM Voyage to Brobdingnag, by Swift—"Whoever could make two ears of corn, or two blades of grass, to grow upon a spot of ground where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together."

# A FEEDSTUFFS FORMULA FEEDS: HOW'S BUSINESS? FEATURE

**On the whole, formula feed business showed no important improvement this week in spite of cold weather and snow in many areas. Feeders continue to be discouraged with prices received for their products, and the trade in general appears to lack confidence in prices, even though grains and some ingredients were stronger. In many instances the approaching year end inventory tax is tending to restrict buying. More interest in dairy feeds was a direct result of winter weather. Otherwise, sales were about unchanged from last week. The index of wholesale feedstuffs prices advanced 4.3 points to 188.3 and the feed grain index moved up 9.2 points to 187.6 in the week ending Dec. 7. (Ingredient details on pages 86-88.)**

## Northwest

Formula feed demand improved slightly for some manufacturers this week, but in general business was rated steady. Cold weather and snow apparently did not influence feeders to step up their purchases to the extent that some feed handlers had expected.

Where improvement was noted, it was attributed to better demand for laying feeds—mostly concentrates—and additional buying of dairy feeds.

Egg prices fell back about 4¢ doz. to 42¢ in the country for Grade A's, and while this was somewhat discouraging it is noted that operations can be fairly profitable at this level in view of lower feed prices prevailing this fall.

Weakness persists in the hog market, and hog raisers are in no mood to purchase formula feeds in any quantity. Some observers commented that farmers are not helping the situation any by holding hogs to heavy weights since these hogs are being most heavily discounted.

Feed prices were somewhat stronger as a few ingredients advanced with grains this week. Lower protein formulas were marked up about $1 ton while heavier protein formulas were not changed by manufacturers.

Operations remained on a five-day basis, one or two shifts, with backlogs a bit larger.

## Southwest

No appreciable improvement in formula feed sales was seen in the Southwest this week, and most mills do not expect any extended increase before the end of the year. Unless unusual conditions exist manufacturers seldom expect any major increase in sales during the holiday period. At the year end in some localities inventories are watched closely to see that they do not accumulate, and most purchases are made in small spot quantities.

This seems to be the case as far as numerous dealers are concerned. Buying of both carlot and truck quantities has been moderate this week, particularly of hog and poultry feeds. There has been a little interest in cattle feeds, but mostly under pressure of stronger promotion. Turkey feed sales have come to a halt, and broiler feed demand is not what it was several weeks ago. Feeding ratios are fair, but not in the favorable position of early in the year. Hogs are selling at a sluggish rate in face of an advance in coarse grain values.

Feed prices advanced 50¢@$1 ton on the average this week. Increases mainly were due to upturns in corn and milo, but there were modest advances by vegetable proteins and millfeed, also. Running time averaged four to five days.

## Southeast

The feed business has been dull this week in the Southeast. Dairy feeds in particular seem to be suffering, with hog feeds just as bad. Poultry feed manufacturers are not bragging about business but on the other hand are not complaining either.

The weather has been mild with some showers, and as yet there has been no frost in the Florida peninsula. Some feeders report that a light frost would help dairy feed considerably in this section and would also stimulate the movement of citrus pulp. Production of citrus pulp is well under way, and ample supplies are available at the present time.

Broiler prices are slightly better, although they could still stand some improvement from a profitable operation standpoint. Poor feed demand, coupled with the fact that feed manufacturers are trying to reduce inventories for the year-end floor tax, has made buying of ingredients very slow most of this week. Most manufacturers complain that feeders continue to utilize home grown corn, hay, silage and other locally-produced feeds, and simply are not buying formula feed.

There is a possibility that peanut meal will be added in the very near future to an already burdensome supply of proteins in the southeastern states. There is still little hope that the feed situation will improve to any great extent before January.

## Ohio Valley

Although pastures no longer are a feeding factor in the Ohio Valley and temperatures continued at subfreezing levels, sales of formula feeds failed to improve, instead remaining

(Continued on page 90)

# Tests Prove KLOTOGEN F® Is Most Effective Vitamin K Source for Broilers, Layers, Turkeys

## ABSORBABLE K FORM IS IDEAL IN NEWER HIGH ENERGY FEEDS

NORTH CHICAGO, ILL. — Superior absorbability of *menadione sodium bisulfite* (KLOTOGEN F) over ordinary menadione in the intestinal tracts of poultry has been established in a new series of tests at Abbott Laboratories, research scientists report.

The first experiments,[1] conducted with rations containing sulfa drugs, indicated that KLOTOGEN F is at least four times as effective as menadione when included in poultry feeds at various levels. Additional experiments, a report of which is now in press, show that KLOTOGEN F is six to 10 times as effective in rations containing sulfa drugs and three times as effective in rations not containing sulfa drugs.

## CORROBORATES FIELD EXPERIENCE

These results substantiate the findings of Bornstein and Samberg,[2] who stopped serious hemorrhagic outbreaks in poultry by parenteral injection of menadione sodium bisulfite. Mortality ceased in a flock of 400 birds in a few hours, and all birds improved markedly within 24 hours.

**Comparative Activity of KLOTOGEN F and Menadione**

| Addition to K-Low Diet* | Avg. 4 week Weight | PROTHROMBIN Avg. Time & Std. Error | PROTHROMBIN % of Normal |
|---|---|---|---|
| | gm. | seconds | |
| None | 306 | 92.5 ± 10.2 | 10 |
| Alfalfa, 2% + Menadione, 2 gm/ton** | 352 | 22.3 ± 0.6 | 100 |
| Klotogen F, 30 mg/ton | 293 | 73.3 ± 6.4 | 14 |
| Klotogen F, 60 mg/ton | 334 | 51.7 ± 3.2 | 23 |
| Klotogen F, 120 mg/ton | 357 | 33.1 ± 1.4 | 49 |
| Klotogen F, 240 mg/ton | 289 | 24.2 ± 1.4 | 77 |
| Menadione, 45 mg/ton | 326 | 79.6 ± 7.6 | 13 |
| Menadione, 90 mg/ton | 285 | 64.2 ± 3.5 | 18 |
| Menadione, 180 mg/ton | 385 | 51 ± 2.3 | 25 |
| Menadione, 360 mg/ton | 314 | 34.2 ± 2.1 | 44 |

*A.N.R.C. Reference Ration minus Alfalfa and Menadione
**A.N.R.C. Reference Diet

10 Straight-run Production Reds per group

*CONSISTENTLY BETTER CLOTTING AND PROTHROMBIN times are shown by groups fed the A.N.R.C. Reference Diet plus various levels of* KLOTOGEN F. *Note inclusion of two control groups, one eliminating all vitamin K sources from the A.N.R.C. ration.*

## VITAMIN K GAINING IN IMPORTANCE

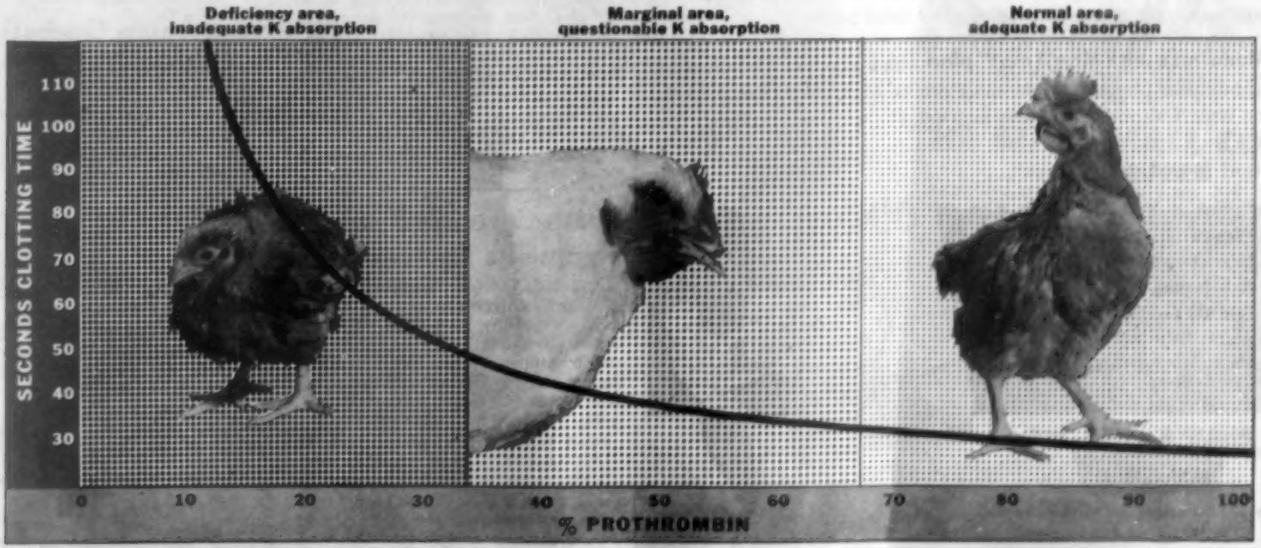
The value of including adequate, absorbable vitamin K in poultry rations cannot be overlooked, especially with increasing use of higher energy feeds and continual improvements in feed production methods.

## KLOTOGEN F IS ASSAY-ASSURED

Each lot of KLOTOGEN F is subjected to quantitative colorimetric assay before it leaves the factory, so that feed manufacturers can be *sure* of how much vitamin K activity they are including in their feeds. Trace addition of KLOTOGEN F at the recommended level of *one gram per ton of finished feed* adds a cost of only *14¢ or less* to the finished feed ton.

Additional information and prices can be obtained by writing Chemical Sales Division, Abbott Laboratories, North Chicago, Illinois.

[1]Frost, D. V., and Spruth, H. C., Poultry Science, XXXIV-1, Jan., 1955.
[2]Bornstein, S., and Samberg, Y., Field Cases of Vitamin K Deficiency in Israel, Poultry Science, XXXIII-4, July, 1954.




*COMPARISON GRAPH of clotting times and prothrombin levels shows approximate areas of normal, marginal and deficiency prothrombin levels in poultry. Field stresses, such as enteritis, debeaking, dubbing and over-medication can cause vitamin K deficiency and resultant hemorrhagic disease in birds in the marginal prothrombin group.*

# Protein Cake, Meal Production Up

WASHINGTON — October production of protein oil cake and meal was up sharply from September.

The U.S. Bureau of the Census reported this week that in October, soybean cake and meal production totaled 580,039 tons, compared with 429,523 tons in September. Cottonseed cake and meal output rose to 328,503 tons in October from the 233,349 tons produced the month before. And flaxseed cake and meal production also went up from 56,216 tons during September to 79,384 tons in October.

Stocks of cake and meal on hand at crude oil mill locations at the end of October, according to the report, were as follows, with the stocks a month earlier in parentheses: soybean 48,958 tons (37,151); cottonseed 170,721 (150,240); flaxseed 23,235 (21,700).

Trade sources reveal that this season's early low prices for soybeans permitted replenishment of many gaps in supplies throughout the processing industry. Stocks at mills at the end of October were high at 74.1 million bushels or twice the 37.1 million at the end of October, 1954. The trade, however, had felt that stocks might be at an even higher figure so that no surprise was involved.

**MARRIAGE ANNOUNCED**

MINNEAPOLIS—The marriage of Mrs. Marian Worthington Waggaman, Reno, Nevada, to Erwin A. Olson has been announced. Mr. Olson is vice president and director of the Archer-Daniels-Midland Co.

# *USDA Sells Dry Milk For Domestic Feed Use*

WASHINGTON—The U.S. Department of Agriculture has announced sales of 344,410 lb. of Commodity Credit Corp.-owned nonfat dry milk for domestic feed use. The dry milk is from stocks found to be unsuitable for human food use. Therefore, it is being sold on a bid basis for feed use.

Of the 344,410 lb. sold to date, Mutual Products Co., Minneapolis, has purchased 142,000 lb. at 10.15¢ lb. in store and 52,650 lb. at 10.25¢ lb. in store, and the Consolidated Products Co., Danville, Ill., 149,760 lb. at 9.15¢ in store.

About 2 million pounds of the quantity found to be unsuitable for food use because of storage damage remain to be sold. The bulk of this quantity is in store in Minnesota and Wisconsin, with small quantities in Missouri and Virginia.

# 324 Attend Northwest Association's Party

MINNEAPOLIS — The Northwest Feed Manufacturers Assn. held its annual dinner-dance Dec. 2, and a record crowd of 324 persons was present for the party at the Calhoun Beach Hotel.

Following the dinner, the feed men and their ladies enjoyed a floor show and dancing.

James C. North, Nutrena Mills, Inc., president of the association, greeted the crowd before the entertainment program began.

Chairman of the party committee was Earl Hanson, Archer-Daniels-Midland Co.

W. Brooks Fields, Jr.

# W. Brooks Fields, Jr., Joins Burdick Grain Co.

MINNEAPOLIS—W. Brooks Fields, Jr., assistant manager of Minneapolis grain merchandising office for Pillsbury Mills, Inc., has resigned that position to join the Burdick Grain Co., Minneapolis grain terminal and merchandising firm. In his new position, Mr. Fields will specialize in the merchandising of grain through facilities of the Burdick organization in Minneapolis, Waseca, New Ulm, Minn., and its new River Barge Terminal in Red Wing, Minn., according to an announcement by A. L. Burdick, president of the company.

Prior to his association with Pillsbury Mills, Inc., in 1948, Mr. Fields was a partner in Northwest Business Service, Inc., for three years.

# Dixie Mills Co. To Build Warehouse

EAST ST. LOUIS, ILL.—Robert F. Deibel, Jr., president of Dixie Mills Co., has announced plans for construction of a 12,000 sq. ft. warehouse in Memphis, Tenn.

Construction is beginning immediately, and completion and occupancy are planned by May 1, 1956.

The warehouse, located on President's Island, will be of the latest design, Mr. Deibel said. It will have an unobstructed interior height of 18 ft. There will be a loading dock of 800 sq. ft., with a special truck canopy section for loading trucks in inclement weather. Air-conditioned offices will be located at one end of the building.

The warehouse will be built on a plot of ground in excess of four acres. This is sufficient to accommodate the company's future expansion plans in the Memphis market, Mr. Deibel said.

He said the decision to build the new warehouse is in line with the company's recognition of the future and growing importance of southern markets.

# North Carolina Feed Shipments Increase

RALEIGH, N.C.—The North Carolina feed tonnage report for October shows a healthy gain over the total in the same month the year previous, and continues a trend of increased tonnage in each month of the fiscal year which started in July.

For October the feed shipped totaled 103,788 tons, compared with 96,821 tons shipped in October, 1954. For the four months, July-October, the tonnage total is 381,086 compared with 364,301 tons in the same period a year earlier.

The October tonnage total was broken down into 82,769 tons reported and 21,019 tons of tag sales, both increases over the year before.

# K.C. Exchange Election Jan. 4

KANSAS CITY — The slate of nominees for Kansas City Board of Trade officers and directors and directors of the Grain Clearing Co. was announced Dec. 8. Running for the office of president in the election Jan. 4 are K. S. Hart, Hart Grain Co. and E. C. Meservey, Jr., Meservey-O'Sullivan Grain Co. W. B. Young, Goffe & Carkener, Inc., automatically moves up to the first vice presidency from second vice president.

Candidates for the office of second vice president are R. Hugh Uhlmann, Standard Milling Co., and Wayne A. Forcade, Midcontinent Grain Co.

Nominees for six positions on the board of directors are J. G. Flynn, John M. Flynn Co.; G. A. Kublin, Continental Grain Co.; S. C. Masters, Masters-Kelley Grain Co.; R. C. O'Brien, International Milling Co.; T. A. O'Sullivan, Flour Mills of America, Inc.; J. A. Ronan, B. C. Christopher & Co.; W. C. Theis, Simonds-Shields-Theis Grain Co.; D. E. Walter, Pillsbury Mills, Inc.; J. J. Wolcott, Jr., Wolcott & Lincoln, Inc., and J. L. Young, Cargill, Inc.

Running for the directorate of the Grain Clearing Co. are Hearne Christopher, B. C. Christopher & Co.; Walter D. Farmer; R. P. Harbord, Goff & Carkener, Inc.; M. D. Hartnett, Continental Grain Co.; F. L. Kelcan, Francis I. duPont & Co.; E. M. Marshall, Shannon Grain Co.; J. H. Rockwell, Cargill, Inc., and G. P. Scoular, Scoular-Bishop Grain Co.

# Hoffman-Taff Names Eastern Sales Manager

SPRINGFIELD, MO.—Hal A. Gillott has been appointed the eastern division's sales manager for the animal nutrition division of Hoffman-Taff, Inc., Walter H. Hoffman, president, announces.

Working out of Drexel Hill, Pa., Mr. Gillott will cover the eastern seaboard area for Hoffman-Taff. One of his first tasks will be to survey the area for a strategic location for a blending plant which Hoffman-Taff plans to establish to better serve its eastern accounts, Mr. Hoffman said.

Mr. Gillott comes to Hoffman-Taff from the Blatchford Calf Meal Co., with which he was associated 23 years, the past 18 years as the Blatchford representative in the area he will serve for Hoffman-Taff.

Hoffman-Taff has its headquarters and manufacturing facilities in Springfield, Mo.

# Rosenbaum Operations In Omaha Taken Over

OMAHA, NEB. — M. R. Glaser, president of Rosenbaum Bros., announced Dec. 7 that his firm's lease on the Illinois Central elevator here is being taken over by the Norris Grain Co. of Chicago.

He added that as soon as the weigh-up of all grain in the 1 million-bushel elevator is completed and other transfers made the Norris company will take over all of the Rosenbaum operations in the Omaha market.

All office and elevator personnel will continue under the management of Harry C. Christianson, present Rosenbaum Omaha manager.

Rosenbaum Bros., a Chicago headquartered firm, has been in the Omaha market since 1938.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...and assure best results for your feed customers—based on FIELD-TESTING!

ManAmar "Sea-Power" formulations are *field-tested* to assure your customers of maximum results under practical feeding conditions.

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The "Modernize with ManAmar" plan with FIELD-TESTED rations can help you and your customers make more profits. ManAmar Feeder Service is Nation Wide. Call *your* ManAmar man today!

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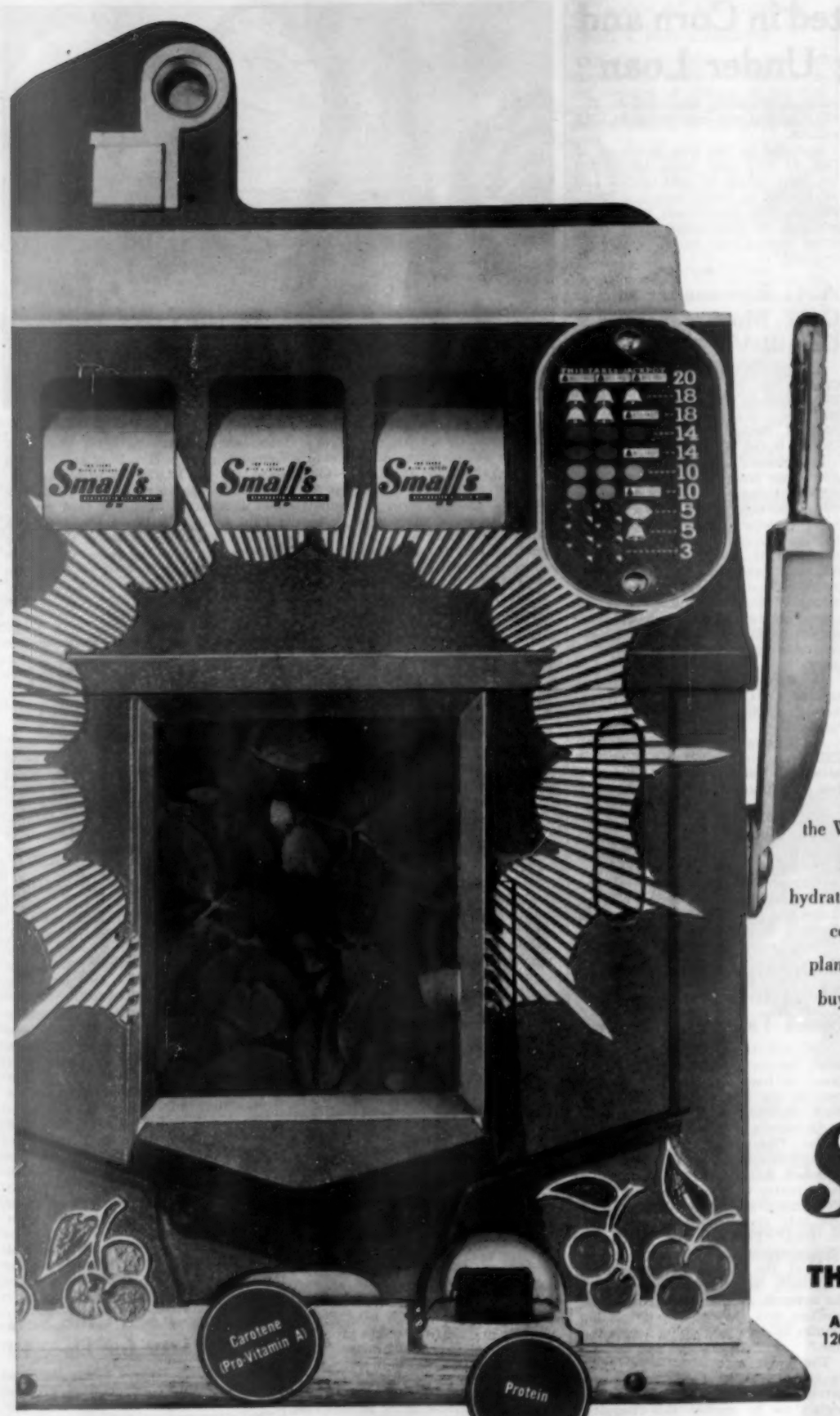


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You strike it *rich* when you order Small's Dehydrated Alfalfa because the W. J. Small Company takes every modern step to insure that the dehydrated alfalfa delivered to your door contains the richness of the growing plant. That's why experienced feed buyers everywhere agree that "a Small investment pays big dividends!"

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DIVISION

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1200 Oak Street Kansas City, Mo.

# Increases Reported in Corn and Soybeans Going Under Loan

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—Wheat loans from the 1955 crop are now estimated by the U.S. Department of Agriculture at approximately 208.5 million bushels as of Nov. 15, 1955. This level is said to be about one third less than at the same time last year, possibly reflecting the small wheat crop in the Southwest for Texas and Oklahoma where market prices have held reasonably well.

On the contrary, corn crop loan commitments had a big shot in the arm this past month with loan impoundings jumping from less than a half a million bushels on Oct. 15 to more than 11 million bushels on Nov. 15.

Another substantial market factor is the early commitments by farmers of soybeans into the loan program. Last year between Oct. 15 and Nov. 15 farmers placed only approximately 7 million bushels of beans under loan. This year for the same time they have placed about 12.5 million bushels under loan coverage. Most of the increase over last year has occurred in the past 30 days.

Heavy farmer loan impounding of beans in face of larger than usual exports and an indicated strong export demand for edible fats seems to support the USDA official decision not to support oil prices this year. However, strong undisclosed pressure is on USDA to announce an oil support program. This support appears to emanate from oil seed processing interests notwithstanding information that behind the iron curtain there is an active inquiry for a minimum of 50,000 tons of lard. Government officials here have continued to state that there is an outlet for every pound of edible oil the U.S. can produce, but there are still substantial doubts that if the maximum demand for oil is met that there will be a home for all the vegetable protein meal produced, even if prices meet the economic equation.

Another feed grain price aspect, in addition to the farmers' interest in corn loan programs, is the loan impounding of grain sorghums which have been moving into export channels from Commodity Credit Corp. stocks at improving price levels.

The USDA report shows that farmers have placed more than 20.5 million hundredweights of grain sorghums in the loan program since Oct. 15, making a total impounding for this crop year of approximately 26 million hundredweights. With USDA an active seller and finding strong export demand for this feed commodity, it appears that sorghums may be a strong spot in the feed market unless CCC opens up its corn stocks for export sales. USDA is under heavy pressure to sell its corn now on a bid basis before the new crop Argentine corn is available next spring.

In an earlier report on the status of the CCC price-support program as of Oct. 31, USDA reported the following approximate quantities of grains in the government inventory: 696.5 million bushels of corn valued at $1,186 million; 34.4 million hundredweights of grain sorghums valued at $97.3 million; 44.5 million bushels of barley valued at $60.4 million; 43.3 million bushels of oats valued at $36.6 million, and 919.4 million bushels of wheat valued at $2,458 million.

As of Oct. 31, 1955, USDA reports the investment of CCC in price-support commodities amounted to approximately $7,745.3 million — made up of loans outstanding of $1,881.4 million (including $556,913,000 of loans financed by lending agencies), and the cost value of inventories, about $5,863.8 million. A year earlier the CCC investment was approximately $6,634.1 million, of which loans outstanding amounted to $2,525.8 million and inventories $4,108.2 million.

Included in the loan totals as of Oct. 31 this year, were 164,600,969 bu. corn valued at $254,196,574 and 184,674,568 bu. wheat valued at $380,969,573. The loan totals include, in addition to 1955 crops under loan, crops from a year earlier that were resealed.

## A. G. Egermayer and C. W. Mooers Named Cargill Vice Presidents

MINNEAPOLIS—The election of Charles W. Mooers and Albert G. Egermayer as vice presidents of Cargill, Inc., has been announced by John G. Peterson, chairman of the Cargill board of directors.

Mr. Mooers' association with Cargill dates from 1928 when he was employed during his summer vacations. He was graduated from Amherst College in 1929 and from the Harvard Graduate School of Business in 1931. He joined Cargill on a full-time basis in 1932. After two years of training in various departments of the company he was assigned to the treasurer's department under his father, Edwin S. Mooers, who was then treasurer of the company.

Mr. Mooers was elected assistant treasurer of Cargill in 1935 and treasurer in 1943, which position he still holds.

Mr. Egermayer was graduated in 1932 from the University of Minnesota Law School and joined Cargill's law department in 1934 after serving a year on the faculty of the University of North Dakota Law School. He was elected secretary of the company in 1943, which office he still holds. In 1953, after heading the law department for several years, Mr. Egermayer assumed his present duties and responsibilities in Cargill's financial department.

## 2 Organizations Back Move to Drop Feed Sales Tax in Oklahoma

OKLAHOMA CITY — Two Oklahoma associations are backing a proposal to have the state legislature remove the 2% sales tax on feed, seed, fertilizer and farm chemicals in Oklahoma.

The Oklahoma Cotton Ginners Assn. and the Oklahoma Cottonseed Crushers Assn. are co-sponsors of a large poster which is headlined, "The Farmer's Sales Tax. Oklahoma is the only state collecting sales tax on feed." The poster continues: "Neighboring states exempt all or part of the raw materials and/or machinery used in farm production. As a result, farmers living near the borders find they can save sizable chunks of money by going across the line."

The poster notes that "since 1942, in every session of the legislature, farm organizations have asked the legislature to correct this inequity. Each time they have failed to do so. In the last session, the first filibuster in state history was used to defeat House Bill 767, which would have exempted feed, seed and fertilizer from sales tax."

Members of the agriculture committee of the Oklahoma State Legislative Council voted recently to conduct an interim study of 2% tax on feed, fertilizer, seed and pesticides. Rep. A. R. Larason of Fargo plans to submit a bill to provide for exemption of feed from the sales tax on filing of an affidavit to show it is for livestock and poultry. He suggested the same type of proposal for seed and fertilizer.

**WORTH WEIGHT IN DOLLARS—Myron Hoff, River Sioux, Iowa, feed dealer, waits patiently on his potentate's throne while pretty Beverlee Wilson of Chicago shovels silver dollars onto a companion scale. Mrs. Hoff is watching the proceeding at center. Mr. Hoff walked off with $2,976, his prize for winning a livestock judging contest for feed dealers sponsored by Chas. Pfizer & Co., Inc., manufacturer of chemicals and antibiotics, including feed supplements. Guarding the pile of dollars is Paul Gallagher. When Mr. Hoff was informed last August that he was the contest winner, he weighed 177 lb. He was told that his weight on Nov. 28 would determine his prize, with each ounce of weight gain worth one silver dollar. His gain of 9 lb. brought him an extra $144. The contest was sponsored by Pfizer in cooperation with feed manufacturers to encourage improved breeding and raising of livestock. The weigh-in ceremony was held Nov. 28 in Chicago.**

# Some Further Decline in Net Farm Income Seen for 1956

WASHINGTON—Some further decline in net farm income is in prospect for 1956, according to the U.S. Department of Agriculture.

USDA made this prediction in a general survey of the agricultural product demand and price situation for the coming year. (Other more specialized outlook stories on the livestock, poultry, dairy and feed situations appeared in the Nov. 26 and Dec. 3 issues of Feedstuffs.)

Cash receipts from livestock products may total as large or perhaps slightly larger than in 1955, but smaller receipts from crops are foreseen. And, when farm expenses are figured in, there may be some further lowering of total net returns from agriculture.

Consumer expenditures for food are expected to be larger in response to higher consumer incomes, but, as in recent years, the effect may be felt more in demand for services attached to processing and marketing of food than on the demand for products at the farm, USDA said.

### Farm Prices

In general, prices of farm products in 1956 may average slightly below the average for 1955 but close to current levels. Livestock and livestock product prices are expected to average about at 1955 levels in view of prospects for a high level of demand next year. Crop prices probably will average lower, reflecting big supplies. Some reductions in price-support levels could occur for certain crops under provisions of present legislation.

Cash receipts from farm marketings so far this year total 4% below a year earlier. Production costs are continuing high and realized net income of farm operators in 1955 may be 10% lower than in 1954. Some further decline in income is in prospect for 1956.

USDA noted that receipts from livestock products may be as large or slightly larger than in 1955 if farmers halt the expansion in hog production. Further acreage restrictions on some crops, possibly lower yields for these crops and possible support reductions are expected to bring smaller receipts from crops.

However, USDA pointed out, farmers' production expenses may be a little lower in 1956 than in 1955. Feed costs will be less, reflecting the lower level of feed prices prevailing recently. Interest and tax payments will be larger. Farm wage rates and prices for many industrial products are increasing.

Thus, USDA said, the economic factors underlying the agricultural situation indicate some further lowering of returns in 1956. This appraisal, however, cannot make allowances for any changes which might result from additional programs that may be undertaken in the next year.

USDA pointed out that declines since 1951 in net income per farm and in income per person on farms from all sources have been much less than the drop in total realized net income. This reflects the rather rapid reductions in farms and farm population which averaged close to 2½% a year between 1950 and 1954.

With farm income down and the farm population fairly stable between April 1, 1954, and April 1, 1955, some reduction in income per person on farms in 1955 is indicated even though income from non-farm sources was probably improved by expanded non-farm job opportunities and higher wage rates.

## Chicago Feed Club Sets Yule Party for Dec. 19

CHICAGO — Santa Claus will be welcomed into Chicago with a bang by the Chicago Feed Club Dec. 19. That's the evening of the annual Feed Club Christmas party. An all-star program is promised, with plenty of prizes.

The event will take place at the Lake Shore Club, and will get under way with a social period at 6 p.m. Dinner will be served at 7 p.m.

### NEBRASKA FIRE

RALSTON, NEB. — The Benson Feed Mill elevator here was damaged by fire, a loss of $65,000 resulting. Firemen from four communities battled the blaze for four hours in 10° weather before bringing it under control. Don Verbecke, manager, said the elevator was filled with corn.

# Illinois Researchers Report on Results Of Stilbestrol, Other Cattle Experiments

URBANA, ILL. — Studies of the effects of stilbestrol and of pelleting were among cattle feeding experiments reported recently by researchers at the University of Illinois.

Reports on these and various other experiments were made in connection with the university's annual Cattle Feeders Day.

One of the experiments was a comparison of stilbestrol and non-stilbestrol-fed steers when fed to equal weights and/or an equal amount of total concentrates. Another dealt with the value of stilbestrol when fed to steers being full-fed on pasture.

Still another experiment was a comparison of feeding a ration as pellets and as a meal to yearling steers.

The researchers noted that numerous experiment stations have shown that stilbestrol increases rate of gain and reduces feed cost when added to fattening rations for steers. However, because the studies have been terminated at a given date, data have been based on cattle that were at different weights at the end of the test.

To get further information, Illinois conducted a test to determine how performance and carcass data would compare if the cattle were fed to similar weights in both control and experimental lots. Also, they sought a comparison when two lots were fed the same amount of total concentrates, both being full-fed on an ad libitum basis.

The steers getting stilbestrol were fed 10 mg. daily. The steers in the test averaged approximately 850 lb. at the start of the test. Those in one of the lots receiving hormone were slaughtered when they reached 1,100 lb. after 96 days on test. The control steers were slaughtered 28 days later when they weighed about the same. The third lot, the other hormone lot, was slaughtered a day later, when the steers weighed 1,141 lb. It was estimated that this lot consumed about the same amount of total concentrates as the control lot.

**Daily Gains**

Average daily gains for each lot at the end of the test were 1.99 lb. for the control lot, 2.56 lb. for the hormone-fed lot slaughtered at about the same weight, and 2.34 lb. for the stilbestrol-fed steers fed concentrates equal to the control lot.

Comparison of average daily gains and feed requirements for control steers and hormone-fed steers slaughtered at equal weights shows that the hormone-fed steers made 22.3% more rapid gains on 21.4% less concentrates. The result was feed cost saving of $5.01 per cwt. gain, or 19.5%.

When performances of the control lot and the hormone-fed lot fed the same amount of total concentrates were compared, it was found that the hormone-fed steers gained 15% more rapidly and required 18.8% less concentrates per cwt. gain. This resulted in a feed cost saving of $3.98 cwt. gain, or 15.5%.

When the researchers checked the performance up to the time the first hormone lot reached 1,100 lb., after 96 days of feeding, it was found that the steers in the two hormone lots gained 12.5 and 9% faster than the control lot and that they needed 12.8 and 14.7% less concentrates to produce a cwt. of gain.

Slaughter data showed no apparent appreciable difference except for some difference in carcass grade, with the control steers somewhat higher. Numbers of steers were small and variation within the control lot was large. Statistical analysis showed the differences were not significant. An on-foot grading committee graded the steers prior to slaughter, and no differences were found which could be attributed to rations or methods of feeding.

**Steers on Pasture**

Another experiment was conducted to study the value of stilbestrol when fed to steers being full-fed on pasture. One lot received no stilbestrol and one received from 10 to 5 mg. per day, the level varying with amount of legume pasture or hay used.

During the first 28 days, the steer calves were brought to a full-feed of ground ear corn, with the roughage gradually reduced. This adjustment period was necessary so that self-feeding could be practiced when the steers went on pasture, April 21. During this period, 2 lb. of commercial supplement were fed so that the stilbestrol lot received 10 mg. of stilbestrol daily. From April 21 to Aug. 24, both lots received a mixture of ground ear corn and supplement, with the hormone lot getting 7.5 mg. of stilbestrol daily. On Aug. 24 half the steers from each lot was removed to drylot to compare methods of finishing steers on pasture and in drylot. Ground shelled corn was substituted for ground ear corn in both lots. The protein concentrate was reduced and steers in each lot received 5 mg. of stilbestrol daily.

Results in the first 28 days showed no differences. During the 126-day period when all steers were on pasture, the steers receiving stilbestrol gained 11% faster and made their gains at a 7% saving in feed cost. During the 56-day final finishing period, the stilbestrol steers gained at an average 6.5% slower rate and

(Continued on page 90)

# Kenneth W. Mainland, Fats, Oil Official, Dies

WASHINGTON — Kenneth W. Mainland, top fats and oils staff official for the International Cooperation Administration died at his office here this week as a result of a heart attack.

Mr. Mainland, widely known in domestic and international fats and oils trade circles, had for many years been closely associated with foreign aid programs and with D. A. FitzGerald in the world-wide relief programs of the International Emergency Food Council acting as the allocation agency of scarce food supplies among foreign nations after World War II.

Dr. FitzGerald, in commenting on Mr. Mainland's death, said, "Another public servant has literally died in harness. Years ago I learned to lean heavily on Mr. Mainland for his knowledge and accuracy of judgment and his loyalty. He never failed me or his government. Friends here and abroad in trade and government will greatly miss him."

Mr. Mainland was born in Clinton, Iowa, 59 years ago. In 1943 he joined the Office of Price Administration to aid in administering the food rationing program. Subsequently he joined the International Emergency Food Council and later was an executive of the U.N. Food and Agriculture Organization.

With the formation of the Marshall aid program, then known as Economic Cooperation Administration, Dr. FitzGerald brought him in as his chief aid on fats and oils as chief of that division. He remained in that post until his death.

He is survived by his widow, Esther and a son, Keith, of Falls Church, Va. His son recently was released from military service in the U.S. Marine Corps as a first lieutenant.

# Officers of Columbus Feed Club Elected

COLUMBUS, OHIO—The "Biotics" defeated the "Antibiotics" in the annual election of officers of the Columbus Feed Club held at a dinner meeting Dec. 2 at the Fort Hayes Hotel.

Balloting showed the following officers elected for the 1956 term: Lloyd Stiles, Urbana Mills Co., Delaware, Ohio, chairman; Max Latham, Max Latham Grain Co., Unionville Center, Ohio, co-chairman; Cleon C. Welch, New England By-Products Corp., Columbus, secretary; Ernest V. Roush, Ostrander (Ohio) Farmers Exchange Co., treasurer; E. O. Thomas, Ohio Department of Agriculture, North Lewisburg, Ohio, director.

Harry Shrode, J-M Trading Corp., Columbus, headed the program committee for the December meeting. The jackpot drawing went to Alfred B. Schirm, Lockville Elevator, Canal Winchester, Ohio. John Baringer, Ohio Department of Agriculture, Columbus, won the grand prize for the evening, an electric shaver. Fifty members and guests were present.

The next meeting of the club will be Jan. 6, 1956.

# Research Institute Appointments Made

WASHINGTON — The Agricultural Research Institute of the National Academy of Sciences-National Research Council has installed Max T. Goebel, E. I. du Pont de Nemours & Co., Inc., as vice president.

Elected members of the governing board were: R. M. Bethke, Ralston Purina Co.; Walter Blake, Pillsbury Mills, Inc.; Victor Conquest, Armour & Co.; J. F. Downing, Eli Lilly & Co.; H. R. Kraybill, American Meat Institute Foundation; R. C. Newton, Swift & Co.; and Edwin Cox, Virginia-Carolina Chemical Corp.

**IOWA FIRM EXPANDS**

POCAHONTAS, IOWA—Construction of a new feed plant for the Farmers Cooperative Co. is under way at Pocahontas, Iowa.


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# USDA Outlines Plans to Expand U.S. Farm Exports

WASHINGTON—Long-range plans for expanding normal commercial exports of U.S. farm products through the use of foreign currencies met with widespread approval by prominent U.S. trade groups and farm organizations at a Dec. 6 meeting in Washington, according to the U.S. Department of Agriculture.

The meeting was called by Earl L. Butz, assistant secretary of agriculture, and Gwynn Garnett, administrator of USDA's Foreign Agricultural Service, to discuss with the agricultural trade the availability and uses of funds for expanding foreign markets under Section 104 (a) of Public Law 480.

Those who attended the meeting were USDA officials and representatives of 32 trade groups and farm organizations which deal in the following foods and commodities: grains and milled grain products, cotton, tobacco, rice, dairy products, fats and oils, livestock and meat products, and fruits and vegetables.

Mr. Garnett explained that about $18 million will be available for export promotion in the next two years from foreign currencies accruing from surplus commodity sales under this law "to help develop new markets for U.S. agricultural commodities on a mutually benefiting basis."

Measures which USDA is either now using or considering include (1) promotion of individual commodities; (2) promoting better nutrition on a world-wide basis; (3) a two-way exchange of visits by buyers and specialists; (4) participation in international trade fairs; (5) overseas education and demonstrations; (6) foreign market analysis, and (7) establishment of trade centers in other countries where U.S. farm products will be on display for the benefit of prospective buyers.

Most or all of these promotional measures can be financed in part by Section 104 (a) funds, Mr. Garnett said. Wherever possible, these measures will be carried on in cooperation with the trade, and it will be asked to share part of the expenses.

The plan to use these measures on a sustaining basis met with approval by trade people present at the meeting. Several requested immediate participation. Foreign Agricultural Service is preparing a fact sheet which will give details on just how the plan will operate.

Several of the trade people represented organizations that had exhibited at trade fairs at Cologne, Germany, and at Bogota, Colombia. Enthusiasm was expressed over this method of promoting expanded markets for U.S. products.

The meeting participants also expressed interest in expanding the two-way exchange of foreign and U.S. buyers, specialists, exporters and importers, and others who deal in agricultural commodities.

Among the trade associations and organizations represented at the meetings were the following:

Western States Meat Packers Assn.; American Farm Bureau Federation; Institute of Shortening & Edible Oils; American Dry Milk Institute; Dairy Industry Committee; Dairy Industries Society, International; National Independent Meat Packers Assn.; National Council of Farmer Cooperatives; Associated Poultry & Egg Industries; National Poultry Producers Federation; Institute of American Poultry Industries; National Turkey Federation; American Poultry & Hatchery Federation; North American Export Grain Assn.; Millers National Federation; National Flaxseed Processors Assn.; National Soybean Processors Assn., and American Meat Institute.

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# FMA Enters Feed Business in Purchase Of Dittlinger Firm

KANSAS CITY — Flour Mills of America, Inc., Kansas City, has purchased the properties of the H. Dittlinger Roller Mills Co., New Braunfels, Texas, at a cost of about $1,500,000, it was announced last week by Henry H. Cate, board chairman of the purchasing company.

The purchase marks the entry of Flour Mills of America into flour milling operations in Texas and also the commercial feed manufacturing business.

"The Dittlinger company will be operated as a division of Flour Mills of America and will continue with the same personnel and policies which have made it one of the leading producers of quality products in flour, corn meal and commercial feeds in the Southwest," Mr. Cate said in announcing the transaction.

The Dittlinger firm operates a flour mill of 2,400 sacks daily capacity, a formula feed plant with a daily capacity of 750 tons and a corn meal mill that can produce 1,200 sacks a day. The firm also has 500,000 bu. of grain storage space at the mill.

The Dittlinger company and its predecessor firms have operated at New Braunfels for more than 70 years. The firm does an extensive business in south Texas and has 15 branches at various points in that territory, including San Antonio, Waco, Austin, Houston and Corpus Christi.

# Collier Wenderoth, Sr., O. K. President, Dies

FORT SMITH, ARK.—Collier Wenderoth, Sr., president of the O. K. Feed Mills, Fort Smith, died suddenly Dec. 6, apparently as a result of a heart attack. Sixty-five years old, he had been a prominent figure in southwestern grain and feed circles for many years. He founded the O. K. feed firm in 1933. Mr. Wenderoth currently had been concerned with the completion of a new mill building to replace the plant lost in a fire last year. The mill is about 30 days from completion.

Mr. Wenderoth was a member of numerous civic, youth and agricultural organizations. He served on the board of such groups as the Ark-Oklahoma Livestock Show and the West Ark Area Council of Boy Scouts of America.

Funeral services were held Dec. 8 in Fort Smith and burial was in the Forest Park Cemetery. Survivors include his widow, Mrs. Virginia Wenderoth; a daughter, Mrs. W. Kenneth Pierce; a son, Collier Wenderoth, Jr., and six grandchildren. Both Mr. Pierce and Mr. Wenderoth, Jr., are associated in the O. K. company. The latter just completed a term as treasurer of the Midwest Feed Manufacturers Assn. and currently is its secretary.

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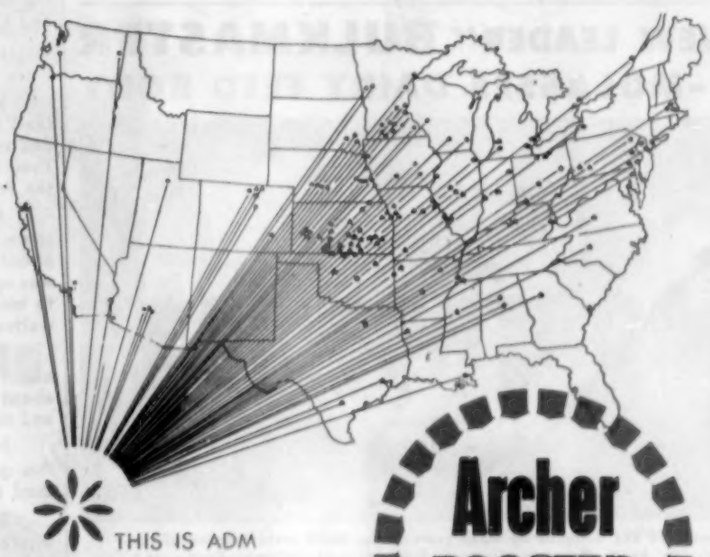

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**WRITE TODAY for information on how you can become an Archer Booster Dealer.**

# New Research Findings Reported at Animal Production Society Meeting

*EDITOR'S NOTE: Reports on new research findings in animal nutrition are presented annually at the meeting of the American Society of Animal Production. Scientists from experiment stations throughout the country gather at the meeting to present and hear reports on significant livestock research work, much of which deals with nutrition. Many industry men also attend the society's meeting. At this year's meeting, held Nov. 25-26 in Chicago with 900 persons in attendance, research men again presented many papers on work dealing with various aspects of animal nutrition. Reviewed in the following article are scientists' reports on research relating to two general subjects—energy and hormones. Next week Feedstuffs will present reviews of research dealing with protein and minerals, and the following week there will be summaries of reports on pelleting, antibiotics and miscellaneous subjects.*

♥ ♥

### ENERGY

**Pigs**—D. M. Baird of the Georgia Experiment Station reported on studies with 5% stabilized prime tallow, 18 gm. of Aureomycin per ton of ration, 0.5% soybean lecithin and 0.5% of a fermentation product relative to their effect upon growth and carcass quality of dry-lot fed pigs. The pigs were fed free choice from weaning to about 190 lb. The basal ration consisted of 78.7% ground barley, 10% ground wheat, 6.3% soybean oil meal, 4% alfalfa leaf meal, 1% of a mineral mixture and appropriate amounts of vitamins.

No differences between lots were apparent in dressing percentage and back fat. The Aureomycin and fermentation product improved performance. Refractive index readings showed all fat-fed lots to have harder fat than the non-fat fed lots with the back fat harder than the kidney fat. It was assumed that the fat-fed pigs deposited a harder back fat due to the higher per cent of hard ration fat. The addition of fat did not materially increase daily gains except in combination with the antibiotic and lecithin, but the fat did greatly increase feed efficiency and its addition at the 5% level proved economically feasible in the three lots where it was used.

Using growth, feed efficiency, carcass quality, and digestibility as the criteria, two experiments involving 80 growing-fattening pigs were conducted by B. E. Sheffy and associates at Cornell University to evaluate levels and types of animal fat in combination with different levels of roughage so as to maintain equal energy and protein contents. The additions to the basal for each lot in the first replicate were: (1) 5% roughage, (2) 3% yellow grease and 12.5% roughage, (3) 6% yellow grease and 23.5% roughage, (4) 10% yellow grease and 37% roughage. The same treatment was used in the second replicate except that Lots 2, 3 and 4 were fed in duplicate. At average weights of 125 lb., one of each of the duplicate lots was switched from yellow grease to hydrogenated dry tallow as a replacement in the respective rations.

Increases in roughage content over 12.5% resulted in slower growth even when the energy content of the ration was kept constant by the addition of fat. The hydrogenated fat was not as efficiently utilized as yellow grease, especially at fat levels of 6 and 10% (Lots 3 and 4 of second replicate). Digestibility of the dry matter, protein and crude fiber decreased as levels of fat and roughage increased. The firmness of the carcasses tended to decrease as the levels of fat and roughage increased.

Working with swine, University of Wisconsin researchers conducted a feeding trial to determine the effects of limiting the energy intake of fattening pigs by feeding high fiber rations upon growth, fattening and carcass characteristics. A basal ration was diluted with either ground alfalfa hay or corn cobs, or a mixture of both, to obtain fiber levels of 12 and 16%. Feeding the high fiber rations significantly increased the length of the feeding period and decreased average daily gain and dressing percentage. Feed costs per 100 lb. gain were lowest when the pigs were hand fed or when ground alfalfa hay was included in the ration, while the rations containing corn cobs produced the most costly (and slowest) gains. Carcass grades of pigs fed the 12% fiber rations were superior to those of pigs fed 16% fiber rations. There were no significant differences between lots as to yield of lean cuts or length of carcass.

USDA scientists R. L. Hiner, J. W. Stevenson and N. R. Ellis also reported on winter and summer dry lot swine feeding experiments in which rations with different levels of protein and fiber, with and without antibiotic supplementation, were tested for their effects on growth and carcass quality of swine. Aureomycin-vitamin $B_{12}$ supplementation significantly increased growth rate during the first eight weeks of both winter and summer feeding trials but not during the latter half. Supplemented pigs had higher dressing percentages, shorter legs, and plumper hams in the winter trial, but there were no significant differences during the summer trial. In the winter trial a high fiber


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UNCLE TOM'S

FEED FABLES

My grandpappy told me he used to have the laziest hound dog in the world. That dog sat down on a burr one day and he just sat there and howled cause he was too lazy to get up.

I always figured grandpappy was just a foolin', but maybe he wasn't cause I've seen people just about that way.

Take Jim Higgens for instance. Jim used to have a right smart little feed business. Course he was the only store in town for quite a spell and most everybody did their tradin' with Jim for eight or ten years. They just came in, that was all there was to it. Jim got so he figured the farmers owed him a livin'.

A couple of years ago one of Jim's customers got an agency for some kind of feed and before long he was doin' pretty well. Jim heard about it right off and he got ahold of the tag and the price this fella was sellin' at and he told me, "He can't never get enough of my business to hurt with junk like that at any such price," and he just sat back and waited. But Jim was wrong.

The more the other fella sold, the madder Jim got. He forgot all about what he had to sell and spent all his time tellin' his customers about how this other fella was robbin' 'em, and he kept losin' out more and more all the time.

I finally said to him one day, "Jim, why don't you just forget about this guy and go out in the country and see some of these people that used to buy off of you."

But Jim said, "No sir! I've got my store right here and right here's where I belong. You don't catch me runnin' up and down these dirt roads just cause some slick talkin' peddler's pullin' the wool over their eyes!"

Well sir, I expect that burr Jim was sittin' on hurt him just as much as the one grandpappy's hound dog sat on. I don't know whether it's laziness or just plain cussedness, but anyhow, Jim's still sittin' there a howlin' and his business has all gone to the bow-wows, wherever that is.



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ration (16% dehydrated alfalfa meal as compared with 4%) significantly reduced growth rate, dressing percentage, thickness of back fat and width through the shoulders, but in the summer trial only width through the shoulders was reduced. Pigs fed higher protein diets (16% vs. 14%) had significantly longer legs, less plump hams, and deeper loins during the winter trial, while all fat measurements except leaf fat, were significantly reduced in the summer trial, and hams from pigs fed high protein rations contained more lean in proportion to fat and chemical analyses showed significantly higher content of water and protein and significantly less fat.

**Lambs**—Iowa State College researchers W. H. Hale and R. P. King reported on the results of an experiment in which graded levels of three fats having different melting points were added to a lamb fattening ration. Corn oil, prime tallow and hydrogenated animal fat were used at levels of 0, 4, 8 and 12% in the ration, to replace equal amounts of corn. At the 4% level in the ration, the different fats had no important effect on dry matter digestibility, but at all higher levels of fat, dry matter digestibility was markedly reduced. Corn oil was found to have the greatest depressing effect upon digestibility of dry matter. When fed at the 12% level, the apparent digestibility of the different fats was: prime tallow, 92%; corn oil, 80%; and hydrogenated animal fat, 64%.

**Steers**—In a comprehensive test at the State College of Washington, a study was made on the effect of added fat, Aureomycin and stilbestrol on the digestibility of pelleted steer fattening rations. The results indicate that added fat significantly reduced the digestibility of ether extract and stilbestrol had little or no effect on the digestibility of dry matter, crude fiber, crude protein and ether extract. Coefficients of digestibility were higher for the rations containing alfalfa hay than the rations containing straw.

**Dairy calves**—The Storrs Agricultural Experiment Station (Connecticut), in cooperation with the USDA, used Holstein calves and lambs in a study to determine the effect of additions of 2.5, 5 and 10% of inedible tallow to a calf starter. Growth of the calves was increased by 5 to 6%, and the addition of tallow reduced somewhat the amount of dry matter required per unit of gain in live weight. Digestibility data from calves and lambs indicated for the calves that tallow decreased the apparent digestibility of dry matter, organic matter, crude protein and nitrogen free extract. The digestibility of ether extract was increased for both the calves and lambs.

**Added fat and heating of feeds**—Studies were conducted at Texas on the effect of added lard and Mazola (corn oil) in the growth of molds and heating in corn and soybean oil meal. The results indicated that added fat delayed heating at any moisture level in the ingredient, but the mixture will eventually heat when the moisture content is above the critical level, regardless of the amount of fat present. There was no evidence to indicate that the addition of fat or an unsaturated fatty oil such as Mazola will increase the susceptibility of an ingredient to heating.

Apparently a stabilized animal fat up to 3 or perhaps 5% can be utilized rather efficiently by pigs and without detriment to carcass quality as a source of additional energy. A hydrogenated hard fat is not utilized as well by pigs as are the better grades of inedible grease and tallow. Pigs do not make very efficient use of much roughage regardless of the energy content of their ration. Adding fat to calves' rations may increase growth performance slightly, even though the fat tends to decrease the digestibility of most nutrients. Other tests have shown that fat added to the grain concentrate ration of matured ruminants also decreases the digestibility of several nutrients.

### HORMONES

**Lambs**—Research workers at Virginia Polytechnic Institute reported that suckling lambs injected with 10 mg. estradiol and 250 mg. progesterone (both are ovarian hormones) or 250 mg. progesterone alone made no faster or more efficient gains than did the control lambs injected with a paraffin pellet. This was true whether the lambs were injected when weighing 35 lb. or 50 lb. The pellets were injected subcutaneously in the ear. No significant difference was observed in carcass grade or dressing percentage between the two hormone-treated lots or the control. About 20% of the lambs injected with the estradiol and progesterone pellets died due to prolapse.

In contrast to these results, T. D. Bell of Kansas State College reported that heavier feeder lambs injected with a hormone pellet containing 10 mg. estradiol and 250 mg. progesterone grew at a more rapid rate than control lambs which were not treated with hormones.

Bell also presented evidence that implantation of a pellet containing 6 mg. of diethylstilbestrol per lamb daily, increased the rate of gain in feeder lambs. In all the lots of lambs injected with or fed hormones in the Kansas study, carcass grades were lower than in the control lot. It was hypothesized that lower levels of stilbestrol might be injected and still get a growth response without lowering the carcass grade. This is to be tested in the future. The feeding of stilbestrol had the same detrimental effect on carcass grade as the injected hormone. All the hormone treatments increased the size of the urogenital system of the wether lambs, with the combination of 10 mg. estradiol-250 mg. progesterone pellets having the greatest stimulating effect.

Scientists at Iowa State College conducted metabolism tests with lambs fed rations containing different levels of stilbestrol. E. W. Cheng reported that lambs fed 2 mg. of stilbestrol daily excreted about 50% of the intake in the feces and 10% of the intake in the urine. In other tests,

(Continued on page 78)

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LARGEST IMPORTERS OF BLACKSTRAP MOLASSES IN THE UNITED STATES
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DAY Dust Control effectively recovers valuable product, controls dust, reduces dust hazards to a minimum, lowers housekeeping costs. For an effective solution to your dust problem write for Bulletin 528-R.

Man's accomplishments in all fields in the past 50 years are nothing short of spectacular. Compare the 12 second flight by the Wright Brothers in 1903 with the 3 hour and 46 minute *non-stop* transcontinental flight made March 9th, 1955. Striking progress in dust control equipment has also been made. When measured against the modern DAY High Pressure Reverse Jet Dust Filter, "rapping" or "shaking" type filters are simply out-of-date.

The DAY "AC" Dust Filter, made under DAY and Hersey patents, is the *modern* filter to match *modern* methods. It handles up to *five* times more dust laden air per square foot of cloth area than out-moded conventional type filters. At the same time this modern DAY Filter requires one-third less plant space.

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Clarence Bear, Bear's Feed & Farm Supply,
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**Exclusive territory franchises still available in some areas. Some aggressive dealer will double his tonnage in your area with Honeggers' Big "H" Feed Franchise. It might as well be you!**

**Watch for a series of Ads featuring Good Businessmen who have doubled their tonnage with the Honegger Program.**

Bear's Farm & Feed Supply
New Boston, Illinois

November 8, 1955

Mr. L. S. Rolf
Honeggers & Co., Inc.
Fairbury, Ill.

Dear Le:

We started out new in the feed business, and when you folks at Honeggers' talked about selling 100 tons of feed in a month, sure we said we would like to, but we didn't think we could do it.

It's been even better than you said, however. Our high month was 130 tonnage and we have been over the 100-ton mark several months already.

The complete Honegger program has helped us in many ways. Your complete line of feed, farm buildings, and of course, the famous Honegger Leghorns.

We do not hesitate to recommend the Honegger program to anyone who is interested in building a good permanent farm service business.

Very truly yours,
Clarence Bear
Clarence Bear
Bear's Feed & Farm Supply

## HONEGGERS' CAN TRIPLE YOUR PROFITS!

# THE HONEGGER PROGRAM

## WHAT OTHERS HAVE DONE...YOU CAN DO ALSO; WITH HONEGGERS' COMPLETE PROGRAM

### HONEGGER FEEDS

Honeggers' offer a complete line of feeds and complete feeding programs that help increase your tonnage. The Honegger line is a "profit-package" backed by continuous research and a rapidly increasing number of enthusiastic users.

### HONEGGERS' "EGG FACTORY"

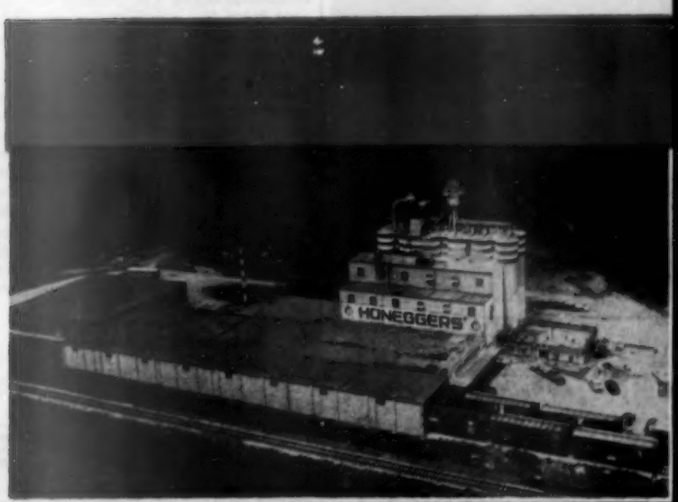
Each dealer receives a franchise to sell Honeggers' exclusive "Egg Factory" program in his area. This is a plan featuring the nationally famous Honegger Leghorn, the Honegger Poultry House and other Farm Buildings, feeds for all livestock and poultry. What a natural for increasing tonnage and profits! Remember, in only a year's time, 500 birds will eat a carload of feed.

### HONEGGERS' LIVESTOCK AND POULTRY EQUIPMENT

With Honeggers' wide variety of dependable livestock and poultry equipment, and accompanying farm supplies, Honegger dealers have a source of supply which features unequalled dealer service. Your customers will come to depend on you as their one-stop dealer for all poultry and livestock programs.

### HONEGGER FARM BUILDINGS

Honeggers' line of pre-built farm buildings are an extra profit plus. There's no additional investment on your part . . . and what a perfect tie-in for your livestock and poultry feed business.




Honeggers' modern feed mill near Fairbury, Illinois, features electronic controls for speed and accuracy, with "push-button" ingredient selection and all bulk handling throughout the plant for top efficiency and economy.

The 600 acre Honegger Research Farm, where practical feeding, management and disease control practices are developed and demonstrated. Dealers find that a tour of Honeggers' by customer prospects really helps sell them.

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HONEGGER Leghorns

# HONEGGERS'

BIG H FEEDS

FEED & MILLING DIV., FAIRBURY, ILL. • BREEDER HATCHERY DIV., FORREST, ILL.

# Poultry Industry's Promotion Calendar For 1956 Announced by PENB Manager

CHICAGO — Aimed at achieving maximum results for the poultry industry through unified and coordinated action, a 1956 schedule of promotions which reflects the industry's unity of purpose has been announced by Dr. James M. Gwin, general manager of the Poultry & Egg National Board.

The schedule was drawn up in full consultation with organizations dedicated to the task of furthering the merchandising of poultry products. It is based on "situation" projections of industry leaders and the U.S. Department of Agriculture. As often as the situation warrants, USDA will feature poultry products in its "Plentiful Foods" reports.

Beginning with January Egg Month, the 1956 calendar of industry promotions lists many traditional promotions of PENB. Wherever another organization has the responsibility of conducting a promotion, the name of that organization is shown. PENB will cooperate in these promotions by servicing consumer information or providing other special assistance.

The National Broiler Council plans to announce four broiler promotions (approximately one each quarter) which will be supplemented by special activities justified by economic or other conditions. PENB will also assist fully in these NBC promotions.

Following is the 1956 calendar of promotions as announced by PENB:

**January**—January Egg Month; indoor broiler barbecues.

**February** — "Tirkee" (turkey) for Lincoln's birthday, Feb. 12; broiler-fryer chicken (and cherries) for Washington's birthday, Feb. 22; eggs for Lent.

**March**—Eggs for Lent.

**April**—Turkey for Easter (National Turkey Federation); eggs for Easter; broiler barbecue conferences (Northeastern Poultry Producers Council).

**May**—Broiler Booster Day, launching spring campaign on broilers, date to be set; turkey for Mother's Day.

**June** — Broiler-fryer chicken for Father's Day, June 17 (Institute of American Poultry Industries); National Cooking Contest, date to be set (Delmarva Poultry Industries, Inc.); turkey for weddings and anniversaries; chicken barbecues.

**July-August** — Midsummer Turkey Time, last week-end in July, first week-end in August (National Turkey Federation); tie-in with "July Is Picnic Month" promotion of American Bakers Assn.

**July-October**—"Push" to increase sales of eggs during pullet-laying season (through state PENB committees and direct mailings of PENB recipe-photo releases to newspapers); chicken and turkey barbecues.

**September** — Broiler-fryer chicken for Labor Day.

**September-October** — Fall Poultry Festival campaign, last week-end in September and first week-end in October (Institute of American Poultry Industries); turkey locker time (National Turkey Federation).

**October** — Eggs for fall parties; eggs for Hallowe'en party favors and dishes.

**November**—Turkey for the president campaign (PENB and NTF); turkey for Thanksgiving campaign.

**December**—Probable campaign on broiler-fryers early in month; turkey for Christmas; ducks, capons and geese for New Year's.

*he's your man...*

**WILL HE MAKE THE SALE?**

That's one of *your* men out there, talking to a prospect. You can't be there to help him . . . he's on his own. Will they just pass the time of day—or will your man come back with the order?

If he'd had the benefit of Purina's complete training program, you could rest easier.

You'd know that your man knew the *right* way to sell. You'd know that he was trained to sell everything you carry . . . from Purina Chows to milking machines.

And, whether the conversation turns to a Purina Feeding Program, or to the ventilation of a poultry house—you'd be sure your man knew how to *sell and service* the merchandise you proudly offer to your customers.

Yes, if your man was trained by Purina, you won't worry about the outcome. But, if your people *haven't* had the benefit of sales training—selling to farm folks these days can be mighty tough and unprofitable, too.

That's why it can be so important for you to discuss the possibility of a Purina Franchise in your area as soon as possible. No matter what business you're in—feed, seed or farm machinery, you can't make the profit you should today if your men aren't trained to sell to farm folks. And that means everyone . . . your bookkeeper, salesman, mixer operator and truck driver . . . even the Boss!

To learn more about the Purina Franchise, write today to: *President, Ralston Purina Company, 1602 Checkerboard Sq., St. Louis 2, Missouri.* Just say that you want to know how Purina Sales Training can help you make more money. Don't put off writing . . . it can mean so much to you and your business.

**PURINA DEALERS GET THIS TRAINING**

for themselves and their employees.

Not just a meeting once or twice a year—but a regular and continuous program that includes:

- **Monthly Training Meetings for *All* Dealer Employees.**
- **Salesmanship Schools for Feed Lot Salesmen.**
- **On-the-Job Training in the Feed Lot.**
- **Special Schools for Mixer Operators.**
- **Owner-Manager Meetings on Profits.**

***The Most Valuable Franchise in Rural America or Canada . . .***

**THE PURINA FRANCHISE**


# Virginia Department of Agriculture Realigned

RICHMOND, VA.—Changes in the administration of laws regulating dairies and dairy products and the distribution of foods, feeds and animal remedies in the Virginia Department of Agriculture were made recently.

The division of dairy and food has been abolished. The division of animal industry has been changed to the division of animal and dairy industries. Dr. W. L. Bendix, state veterinarian, is director of the division.

The division of chemistry has been changed to the division of chemistry and foods and the administration of all laws relating to foods, feeds and animal remedies has been transferred to this division. The division will continue to supervise the general chemical and physical laboratories of the department. Rodney C. Barry, state chemist, is director of this division.

Supervisor of feeds is C. F. Bruce, who has his offices at 1123 State Office Bldg., Richmond 19.

# ADM Feed Dealers At Training Session

MINNEAPOLIS—A two-day training institute for Archer feed dealers and their employees was conducted recently in Minneapolis by the formula feed division of Archer-Daniels-Midland Co. Nearly 70 persons from the seven states served by ADM's northern feed division attended.

Subjects receiving emphasis during the course were fundamentals of livestock nutrition, sales promotion and farm service work. The program was supervised by E. H. Ziegenhagen, ADM feed sales director. Other members of the firm's sales and research staffs participating were Harry Winchester, sales manager; Al Hansen, turkey service director, and Earl Hanson, W. F. Witz and Gene Robajdek, nutritional research department.

**BREWERS DRIED GRAINS PRODUCTION (tons)**

The Production & Marketing Administration reports the following statistics on brewers dried grains:

| | 1954-55 Monthly | 1954-55 Cumulative | 1955-56 Monthly | 1955-56 Cumulative |
|---|---|---|---|---|
| October | 16,300 | 16,300 | *18,400 | 18,400 |
| November | 14,200 | 30,500 | ..... | ..... |
| December | 17,100 | 47,600 | ..... | ..... |
| January | 16,200 | 63,800 | ..... | ..... |
| February | 16,300 | 80,100 | ..... | ..... |
| March | 19,600 | 99,700 | ..... | ..... |
| April | 22,300 | 121,900 | ..... | ..... |
| May | 25,100 | 147,000 | ..... | ..... |
| June | 25,000 | 172,000 | ..... | ..... |
| July | 23,500 | 195,500 | ..... | ..... |
| August | 22,600 | 218,100 | ..... | ..... |
| September | 20,300 | 238,400 | ..... | ..... |

*Preliminary.

Stocks of brewers dried grains on hand at plants and warehouses Oct. 31, 1955, amounted to 4,550 tons compared with 6,000 tons Sept. 30, 1955, and 8,300 tons Oct. 31, 1954.

**DISTILLERS DRIED GRAINS PRODUCTION**

**October, 1955, With Comparisons**

The Production & Marketing Administration reports the following statistics on distillers dried grains output (in tons of 2,000 lb.):

| | Dark grain | Light grain | Dried solubles | Total |
|---|---|---|---|---|
| Oct., 1955* | 15,800 | 7,600 | 4,700 | 28,100 |
| Sept., 1955 | 13,700 | 6,500 | 3,900 | 23,100 |
| Oct., 1954 | 13,700 | 3,300 | 5,000 | 22,000 |
| Sept., 1954 | 10,000 | 4,000 | 2,800 | 16,800 |

*Preliminary.

Stocks of distillers dried grains on hand at plants and warehouses Oct. 31, 1955, amounted to 2,000 tons as compared with 2,300 tons Sept. 30, 1955, and 4,200 tons Oct. 31, 1954.

# Extend YOUR Sales Area . . .

Like all good business men, the modern farmer is interested in services and equipment that helps him reduce costs, and increase his farm income. He is sold on mobile feed processing service because it saves him hours of time and work to have his feed ground **where feed is fed.**

Millers equipped with CHAMPION Mill and Mixer Units report that they have extended their trading areas, and won new customers. ON-THE-FARM grinding and mixing service has increased their tonnage volume. Many of their customers are farmers who have discontinued the operation of their own tractor-powered feed grinders in preference to the **complete** feed grinding service provided by the CHAMPION operator.

Savings in time and work are also important to the feed processor. That's why so many dealers choose the CHAMPION for ON-THE-FARM sales work.

CHAMPION'S powerful 170 h.p. units are built for smooth, efficient performance with a minimum of moving parts. These **all-hydraulic** units will outperform any other grinding and mixing units, yet they sell for less than most other makes. With CHAMPION'S big 110-cu. ft. capacity and its finer, faster grinding, you save time on each job and process more tonnage of feed per day.

Investigate today! Don't pass up the splendid opportunities for increased ON-THE-FARM sales in your locality. We will be glad to cooperate with you in making a careful survey of your trading area. From the number, type and size of farms in your territory, we will analyze your potential sales, and recommend the type of equipment best suited for your own particular needs.

You may be as agreeably surprised over the possibilities for extending your business as many other dealers have been. Find out what your sales area holds for you. Simply write for our survey forms and procedure methods.

**You can pay more money, but you can't buy better feed grinding and mixing equipment**

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*CHAMPION mills are backed by 27 years of manufacturing experience*

# CHAMPION

**MILL AND MIXER UNITS**

# Pellet Feeding of Lambs Done on Commercial Scale in California

**By Roy Hitchcock**

A king-sized commercial pellet feeding of lambs has just been completed in the Sutter Basin area of California's central Sacramento Valley. This operation fed out 30,000 feeder lambs to prove the worth of feeding a pelletized ration to lambs for successful market finishing of a better lamb at less cost per head than with a loose form of the same ration.

Although feeding out lambs on pellets is not entirely new, the system having been under successful trial in New Mexico by P. E. Neal in cooperation with the U.S. Department of Agriculture, this was the first attempt at feeding on so grand a scale.

During the month of April and continuing on through August of 1955, Kempton Clark and Phil Larner of the Sutter Basin Land Co. followed the drying grasses along the north coast of California, buying up feeder lambs as the grasses played out. When they finally stopped their buying spree with the intake of mountain meadow lambs, they had purchased the 30,000 head and installed them in 100 corrals on their home property near the Sacramento River at Robbins, Cal.

### Daily Gain of .48 Lb.

The success of the venture borders on the phenomenal. Not only did they save feed by pelletizing the ration but the lambs made an average .48 lb. gain per day and were upgraded from strictly commercials to better than 90% choice grade.

The "north coast" lambs, as they are called, have a history of being price depressors. They have been dumped on the market each spring for many years at the end of the grass season because with the feed gone, the sheepmen can no longer hold them. This sends lamb prices rolling downhill with disastrous results to all concerned. With Mr. Clark taking the number he did from their hands, the dumping was less severe and instead of offering poor quality lambs to the processors in a flood, he was able to give their buyers a "Field Day" by presenting choice lambs over a long period of time. The buyers could take only the choice if they wished, leaving the few goods, and Clark guaranteed them a dress-out weight of 50%, something unheard of prior to this operation.

**These lambs gained .48 lb. daily and graded choice through the feeding of a pelletized ration in a 30,000-lamb feeding venture in California's Sacramento Valley. In the background is the pelletizing plant of the Sutter Basin Land Co., the firm which undertook the king-sized feeding project.**

The lambs were divided into lots of 350 to 400 head per pen with three eighths-inch diameter pellets half an inch in length fed free-choice from three two-ton self-feeders to a pen. Along the fence row troughs held free-choice grass silage from the company's 20 large glass lined silos.

The pellets consisted of a 70% roughage-30% concentrate mix that contains 57% dehydrated alfalfa meal, 35% barley and 8% molasses. Ten milligrams of aureomycin per pound of pellets was also added, Mr. Clark states. He found that higher levels of the antibiotic interfered with the progressive growth of his ruminants.

### Different Idea

The high roughage-low concentrate ration has been discovered to be superior to generally accepted ideas on feeding for fattening animals. This has been explained by attributing ideas on sheep feeding in the past to be the same as those for fattening hogs and poultry. Sheep must be fed according to their own demands, Mr. Clark pointed out, which means a bigger percentage of concentrates is not demanded and in fact, will set the lamb's growth back.

Two things were apparent after the feeding started that showed Mr. Clark and Mr. Larner that they were on the right track. The consumption of pellets over loose feed of the same ration was definitely in favor of pellets and all lambs had access to the same feed for as much as they wanted at all times. The feeding showed an 800-lb consumption of loose feed compared to 625 lb. of pellets for the same number of sheep fed for the same number of days.

"Nosing out" of less desirable feeds in the ration by the lambs was

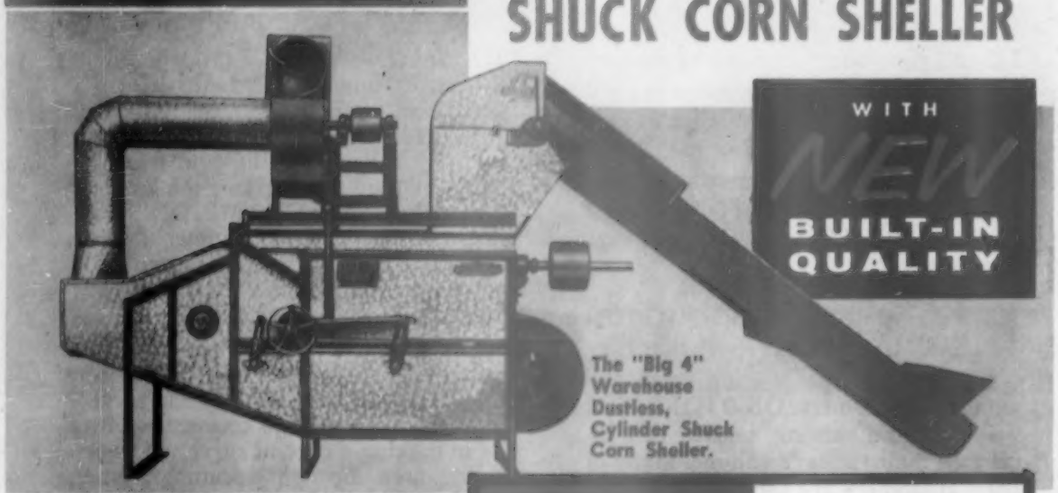
(Continued on page 54)


FOR MORE YEARS OF BIG-VOLUME SHELLING

BELLE CITY BUILT

JOLIET CYLINDER SHUCK CORN SHELLER

WITH NEW BUILT-IN QUALITY



The "Big 4" Warehouse Dustless, Cylinder Shuck Corn Sheller.

A BUSINESS-GETTER FOR MILLS, ELEVATORS, WAREHOUSES

Introduced over a century ago, the Joliet has won an enviable reputation for fast, clean shelling, complete separation of corn, cobs, chaff and dirt, and years of trouble-free performance. For years now, the Joliet has been Belle City built . . . modern steel construction. Recent refinements make today's Joliet better than ever.

FAN—Sturdy, powerful, 6-blade roller-bearing fan on roller bearings assures powerful suction, and clean shelling.

FRAME—All steel, interlocked and electrically welded.

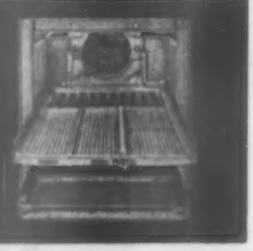
CAPACITY in snapped corn, 400 to 700 bushels per hour.

BETTER SHELLING CAGE CONSTRUCTION

The Joliet cage is specially designed with steel rings and steel rods . . . practically indestructible. Each individual beater is keyed on the shaft separately. A broken beater does not mean an entire new assembly.

GREATER SIEVE CAPACITY

Welded, all-steel construction permits sturdy, wide sieves, greater capacity. The upper sieve — a Closz adjustable sieve, is for the cobs and husks . . . the lower sieve for shelled corn. Sieves driven by roller-bearing eccentrics.



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Dept. FS-100, Racine, Wisconsin
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Address.....
State.....
No. of Elevators.....Capacity.....

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We will mail you colorful folder giving further details and specifications . . . and testimonials from users.

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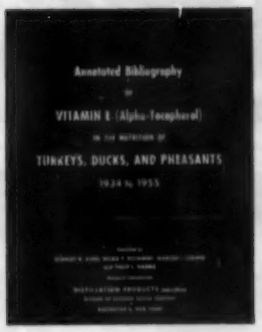


## To those interested in turkey nutrition:

We have just published a booklet, "Annotated Bibliography of Vitamin E in the Nutrition of Turkeys, Ducks and Pheasants," the third in a series of bibliographies prepared in our laboratories to review work on vitamin E in poultry and animal nutrition.

This volume contains abstracts of 78 papers published in this field from 1934 to 1955 and provides a comprehensive guide to the present status of vitamin E in turkey nutrition.

Of current interest to feedmen are the abstracted reports of experiments from several parts of the United States which have shown that extra alpha-tocopherol added to a practical ration has remedied low hatchability. Some of the abstracted papers review the many factors involved in prevention and cure of hock-enlargement (perosis) and show that alpha-tocopherol is one of the principal dietary factors in this complicated and not uncommon disease. Other reports suggest that the stability of turkey flesh during long cold storage is dependent upon tocopherol content.

As a practical result of vitamin E research, several universities have established levels of vitamin E for various rations. These levels are described in the bibliography. Growing numbers of feed manufacturers have undertaken to translate the experiment-station successes of vitamin E into workaday feed economics through the use of Myvamix Vitamin E Feed Supplement.

Myvamix Supplement contains d-alpha-tocopheryl acetate (the natural isomer of vitamin E) absorbed on a base of soy meal. In this highly active and extremely stable form, feed manufacturers find it easy to add vitamin E to their formulas at low cost.

If you would like a copy of the bibliography, we shall be happy to send you one. If you are considering vitamin E for some of your formulas, we shall appreciate the opportunity to discuss the facts and figures of your requirements. Write ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York, Chicago, and Memphis • Charles Albert Smith Limited, Montreal and Toronto.

"Myvamix" is a trademark.

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DPi

Also . . . vitamin A . . . distilled monoglycerides . . . some 3500 Eastman Organic Chemicals for science and industry

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As a feed dealer, you're in business to make a profit. So it stands to reason that you'll want to sell Sargent MINRAL MEAL, the supplement preferred by successful hog raisers. Sargent MINRAL MEAL—just one of a complete line of Sargent feeds—is a protein and mineral balancer that keeps your customers coming back. Write today for details of our attractive dealer set-up.

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## *Illinois Specialist Predicts Leaner Beef*

URBANA, ILL.—Too much finish, or external fat, on choice and prime grades of beef cattle cut feeders' profits and create more waste for meat packers, according to B. C. Breidenstein, University of Illinois meat specialist, who says cattle feeders today are trying to put too much finish on their fat cattle. This higher finish requires more time, labor and feed. It also reaches a point where the animal becomes "patchy fat."

Mr. Breidenstein believes beef cattle will follow the same pattern the swine industry has in the past few years—that of going toward a type of animal that will hang a higher quality carcass on the rail, minus an overabundance of external fat, or finish.

Ten years ago swine growers said this new meat-type hog would never be produced in large numbers, but today the Illinois specialist points out, many meat packers are paying higher prices for the long, meaty type of hog. The progressive swine breeders are now switching their breeding stock to this type of hog.

Mr. Breidenstein says he doesn't know whether the longer bodied animal will replace the short, blocky type of beef cattle, as was the case in the hog industry, but that there will definitely be a trend toward high-quality beef with a minimum of outside finish. If a longer beef carcass will yield a higher cut-out value, then obviously breeders will need to select for greater length, he explains.

This change in beef cattle will not take place over night. However, Mr. Breidenstein feels that within the next 15 years the housewife will be buying high-quality beef, with less external fat, at more reasonable prices for choice and prime grades.

## Arizona Firm Names Feed Sales Director

PHOENIX, ARIZ.—Alan Browne has been appointed feed sales director of Arizona Flour Mills, maker of dairy and poultry feeds. Mr. Browne has had 20 years of feed experience. He is a past president of the Central Arizona Poultry Assn., and head of the legislation committee of the Arizona Poultry Federation. He sparked the drive that resulted in the enactment of the Arizona Egg Law in 1952.

YOUR GRAIN moves like the wind with the

## New 900 SUPER VAC-U-VATOR

to or from FLAT STORAGE economically!!

The newest—easiest and most economical method of conditioning and moving grain from flat storage with no grain damage. Fully portable and a one man operation. The revolutionary Vac-u-vator will transfer grain 300 feet entirely by air flow without damage. Capacity—Corn, Oats, Barley 1200-1600 Bu. per hour. Wheat, Soybeans 800-1200 Bu. per hour. Rice 1200-1400 Bu. per hour.

*Write for further information*

DUNBAR-KAPPLE, Inc. Geneva, Ill. VAC-U-VATOR DIVISION

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Use the VAC-U-VATOR PURCHASE PLAN
VAC-U-VATORS Now Available on Liberal Terms

# BARNETT'S CAROTENE

*nature's way of vitamin A*

*CAROTENE is nature's way of supplying vitamin A for most animals and poultry. Richly concentrated in carrot oil, it is the most economical carotene product for use in feeds.

And there are other advantages to Barnett's Carotene — Contains as much natural vitamin E (tocopherols) as wheat germ oil, together with lecithin and valuable fat soluble ingredients from carrots. Try Barnett's Carotene and see what a difference it makes!

You'll be interested in our new low prices, free testing samples and information on the preparation of stable dry mixes. Write today!

* SPECIAL INTEREST TO POULTRYMEN

*Barnett's Carotene in Carrot Oil is an aid to better pigmentation in eggs and broilers.*

BARNETT Laboratories Inc.
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The sexton had been laying the new carpet on the pulpit platform and had left a number of tacks scattered on the floor. "See here, James," said the parson, "what do you suppose would happen if I stepped on one of those tacks right in the middle of my sermon?"

"Well, sir," replied the sexton, "I reckon there'd be one point you wouldn't linger on."

◆ ◆ ◆

The discouraging thing about spring is that everything seems to come back but us.

◆ ◆ ◆

School days are the happiest of your life. Providing, of course, your youngsters are old enough to go.

◆ ◆ ◆

Experience: Business man's definition of his own mistake.

◆ ◆ ◆

Juvenile delinquency: Modern term for what we did as kids.

◆ ◆ ◆

Money may be the root of all evil, but it sure grows into some beautiful-looking shrubbery.

◆ ◆ ◆

The honeymoon is also over when hubby no longer smiles gently as he scrapes his burnt toast.

◆ ◆ ◆

We didn't all come over on the same ship, but we're all in the same boat.

◆ ◆ ◆

Six young housewives in a certain block of flats fell into a dispute which, by reason of the disturbance it caused, resulted in their being haled into court. When the case was called they all made a concerted rush for the bench and broke into bitter complaints at the same moment. The judge sat momentarily stunned and then rapped for order. When quiet had been restored, he said calmly, "Now, I'll hear the oldest woman first." That closed the case.

◆ ◆ ◆

A cub reporter reported a near-fatality this way: "The woman was overcome by gas while taking a bath, but owes her life to the watchfulness of the janitor."

◆ ◆ ◆

No two people are alike and both of them are glad of it.

◆ ◆ ◆

Two little girls were playing together on Washington's birthday. The 6-year-old, smug about going to school, remarked, "George Washington has been dead hundreds of years."

"He has not!" snapped back the 5-year-old. "I saw him on television yesterday."

SINCE 1908
FARMERS FRIEND
TRADE MARK REG. U. S. PAT. OFF.
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MINERAL FEED
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Contains important mineral elements blended with COBALT, MANGANESE, ZINC, BORON, IRON, COPPER, STABILIZER IODINE and other trace minerals in carefully calculated proportions to supply necessary mineral nutrition.
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Use Naugatuck DPPD
for healthier, handsomer poultry

this anti-oxidant
does three jobs:

1. PREVENTS CRAZY CHICK DISEASE! By deterring the oxidation of fat-soluble vitamins, such as A and E, Naugatuck's DPPD keeps feeds appetizing longer—free from rancidity—even when stored in warm temperatures. It prevents the loss of vitamins A and E both in the feed and in the chick's digestive tract. And DPPD may actually function in place of vitamin E in the bird's body. It provides a 2 to 4 fold increase of vitamin A stored in the liver as well as increasing the level of vitamin A in the blood plasma.

2. GREATLY INCREASES THE EFFECTIVENESS OF PIGMENT SOURCES! Helping in the conversion of carotine from xanthophyll concentrates, alfalfa meal and yellow corn, Naugatuck's DPPD assures good dispersion of pigments, improves the skin and shank coloring in broilers.

3. PREVENTS DEFICIENCY DISEASES! Naugatuck's DPPD stabilizes and promotes full use of vitamins A, D, E, and K in addition to retaining those unsaturated fatty acids necessary for normal growth and metabolic function.

For use as an anti-oxidant, Naugatuck's N, N¹-diphenyl-p-phenylenediamine is supplied as a finely-divided, free-flowing, non-hygroscopic powder for addition to poultry feeds in concentrations of ¼ to ½ pound per ton of feed.

Naugatuck's DPPD provides definite possibilities for improving the market quality of poultry. Why not investigate how you can profit through more efficient fat-enriched feeds TODAY? We'll be happy to send you further details and sources of supply.

Naugatuck Chemical
Division of United States Rubber Company
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producers of seed protectants, fungicides, miticides, insecticides, growth retardants, herbicides: Spergon, Phygon, Aramite, Synklor, MH, Alanap, Duraset.

Harold J. Schneider

**REPRESENTATIVE** — Harold J. Schneider has been appointed a sales representative for Arkell & Smiths' flexible packaging division, it was announced recently by Ernie Heath, division sales manager. Prior to joining Arkell & Smiths, Mr. Schneider, a graduate of Marquette University, was a sales representative of the Shelmar Co. He will have his headquarters in Philadelphia.

**OHIO CONFERENCE SPEAKERS**—A battery of program participants helped bring the latest in nutritional developments to delegates to the Ohio Animal Nutrition Conference, held at Ohio State University, Columbus, Nov. 11. Most of those on the program are pictured as follows, all identified left to right: Raymond Bunnell, Hoffman-LaRoche, Inc., Nutley, N.J.; Richard Cochran, Ohio Farm Bureau, Columbus; Robert Kemper, Early & Daniel, Inc., Cincinnati; Martin Schultz, Urbana (Ohio) Mills; E. I. Robertson, John W. Eshelman & Sons, Lancaster, Pa.; Nelson Richards, Richards Milling Co., Cortland, Ohio; W. E. Huge, Central Soya Co., Inc., Ft. Wayne, Ind.; James Waddell, E. I. du Pont de Nemours & Co., Wilmington, Del.; H. S. Teague, Ohio Agricultural Experiment Station, Wooster; A. R. Winter, Ohio State University, Columbus; V. R. Cahill, OSU; Fordyce Ely, OSU; O. G. Bentley, OAES; L. A. Kauffman, OSU, and Wise Burroughs, Iowa State College, Ames.

**FEED SURVEY COMMITTEE**—Shown here in session in Chicago recently are members of the College Feed Survey Committee, sponsored by the American Feed Manufacturers Assn. This committee was responsible for compiling data on estimated feed use and supplies for the 1955-56 feeding year. Meeting with the college men were members of the industry advisory committee and officers of the AFMA.

Members of the feed survey committee are: Dean A. E. Darlow, Oklahoma A&M College (chairman); Dean H. M. Briggs, University of Wyoming; Dean Frank J. Welch, University of Kentucky; Dr. H. R. Bird, University of Wisconsin; Prof. J. S. Carver, State College of Washington; Dr. H. L. Fuller, University of Georgia; Prof. T. D. Runnels, University of Delaware; Dr. E. P. Singsen, University of Connecticut; Dr. G. F. Stewart, University of California; Prof. J. P. LaMaster, Clemson Agricultural College; Dr. C. F. Huffman, Michigan State College; Dr. I. W. Rupel, Texas A&M College; Dr. S. E. Smith, Cornell University; Dr. L. E. Hanson, University of Minnesota; Dr. T. J. Cunha, University of Florida; Dr. J. F. Lasley, University of Missouri; Dr. S. W. Terrill, University of Illinois; Dr. R. F. Cox, Kansas State College; Prof. C. C. Culbertson, Iowa State College; Dr. C. S. Hobbs, University of Tennessee; Dr. L. E. Washburn, Colorado A&M College; Dr. L. C. Cunningham, Cornell University, and Dr. L. S. Hardin, Purdue University. Members of the industry advisory committee are: Dr. R. M. Bethke, Ralston Purina Co., St. Louis; Dr. J. L. Krider, McMillen Feed Mills, Ft. Wayne, Ind., and Dean McNeal, Pillsbury Mills, Inc., Minneapolis.

AFMA officials attending: W. E. Glennon, president; W. T. Diamond, secretary; R. L. Kathe, agricultural service director, and D. K. Webster, Jr., chairman of the AFMA board of directors, H. K. Webster Co., Lawrence, Mass.

**OUTFITTING THE PROFESSORS**—Three members of the staff of the department of flour and feed milling industries at Kansas State College were presented at the recent Midwest Feed Production School with cover-alls which they can wear while in the new pilot feed mill at the college. The K-State Feed Tech cover-alls were presented to the professors during the banquet at the production school in Kansas City. Left to right are Lloyd Larson, executive vice president of the Midwest Feed Manufacturers Assn., who made the presentation, and Eugene Farrell, G. D. Miller and Dr. Waldon Hastings of the K-State staff.

**FLORIDA OFFICERS**—Officers of the Florida Feed Dealers Assn. pose in front of a typical Florida scene of Silver Springs. The picture was taken at the time of the election of officers held during the recent Florida Nutrition Conference in Gainesville. Left to right, Keith H. Morgan, Tampa, president; Julian C. Smith, Tallahassee, vice president; Frazier V. Rogers, Jacksonville, secretary, and Parker Hitzfield, Tampa, treasurer.

## Camera Views of the News

# B·Y®

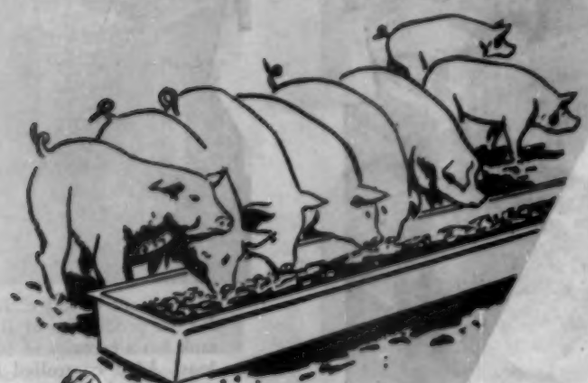
## CSC BUTYL FERMENTATION SOLUBLES

## *a new twist to an old standby*

B·Y has been preferred for 16 years as a rich, natural source of riboflavin. There are now *important new reasons* for buying B·Y . . . 1) the high content of unidentified growth factors, 2) the high content of protein, and 3) the high content of B complex vitamins such as pantothenic acid.

The unidentified growth factors found in CSC butyl fermentation solubles bring about increases in growth, feed efficiency, egg production and hatchability above and beyond that expected from a ration complete in all known nutrients.

B·Y is all rich feed with a protein content of 25%. It also contains the B-vitamin group in amounts that are significant in your finished feeds. For example, at recommended levels of 40 pounds per ton, B·Y supplies 3.9 grams of pantothenic acid per ton of finished feed.



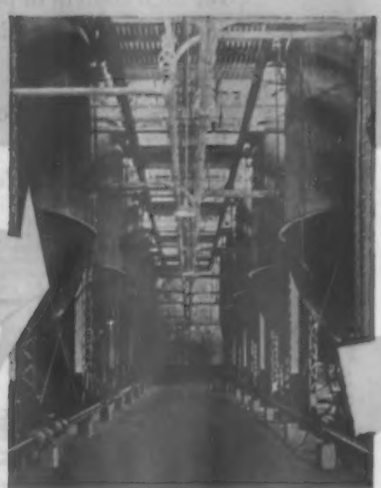
### B·Y IDEAL FOR ALL RATIONS

B·Y produces excellent results in all types of rations—for chickens, turkeys, ducks, swine, calves, dogs, horses and fur-bearing animals. It is the No. 1 choice of leading experiment stations. Feed manufacturers still call B·Y the "gold standard of fermentation products" and the preferred source of fermentation growth factors for all their feeds. You will find nothing better on the market!

# NOW... continuous big-tonnage day after day.

## Yes... our Peoria Plant is now equipped to deliver the goods on Time! in Quantity! Anywhere!

B·Y butyl solubles are produced here at the CSC Peoria Plant in the heart of the livestock belt.



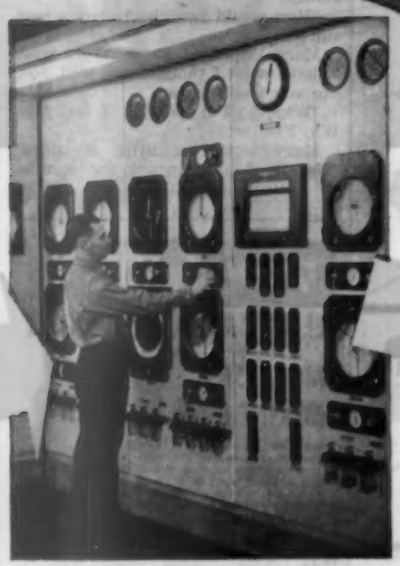
View of one battery of fermenters for the production of B·Y. Each tank has a capacity of 50,000 gallons! After controlled fermentation is completed, evaporators concentrate the butyl solubles into a thick syrup which is then dried in the latest type of spray drier.

# B·Y BUTYL FERMENTATION

## Recommended Source of Unidentified

ANIMAL NUTRITION DEPARTMENT, COMMERCIAL SOLVENTS CORPORATION,

# production of B·Y ..year-round!



Electronic devices assure consistent high-quality B·Y — a dry, free-flowing product of uniform potency day in and day out, shipment after shipment.

The finished product, available in 50-pound multi-wall, valve-type bags, is ready for fast delivery to feed manufacturers from coast to coast.

Immediate shipment can be made by rail and truck.

## SOLUBLES

**Growth Factors**

260 MADISON AVENUE, NEW YORK 16, N. Y.

*Also Availiable: B·Y Basic*

*For greater economy... all B·Y products can now be supplied in bulk cars.*

## Joe Pulls a Surprise on Mary

The roast chicken meal had been delicious, and Joe, ignoring his waistline, had even taken two pieces of delicious cinnamon flavored apple pie which Mary had baked that very afternoon. Now, sitting in the living room reading his newspaper, while Mary busied herself washing dishes, Joe felt very content with himself, his own little family and the world in general.

"I've put in a good day's work. I served a lot of customers. I enjoy my food, and I'm crazy about my family. What more can I want?"

Thus, Joe thought. But a little imp, flashing into his consciousness, said, "That's okay, brother. You have taken care of Today, but how about Tomorrow? It will be here in 12 hours."

Joe frowned. That was it. There was always tomorrow, with its problems, with its fight for business and with the battle to make a decent profit in the face of mounting costs. A feed dealer, any business man, must think about Tomorrow, Joe figured. And perhaps that was what kept a fellow on his toes, brought out the best in him. It could be, he thought.

Now Joe got up and walked into the kitchen, a speculative look in his eyes. He grabbed a dish towel and picked up a dish. "Need some help, hon?" he asked.

Mary's lovely blue eyes opened wide with surprise. "W—why, yes, dear! How nice of you to offer. Usually I have to—" She stopped—diplomacy taking over.

"Usually you have to ask me, is that it?" Joe grinned.

"Well, I know you like to read your paper from cover to cover," Mary said. "But I like to get the dishes done quickly, too, so we can watch television together."

"Sure, life is a matter of constant adjustment," Joe declared. "Look at the farmer. A year or two ago hog prices were up and the farmer was making good profit on hogs. But egg prices were down. Now hog prices are down and egg prices are up over a year ago. More adjustment."

"But we're all living, aren't we?" asked his wife. "And that's something."

### Joe Surprises Mary

"I wish my customers could look at it that way," Joe stated slowly. Then, "Mary, how would you like to buy a new suit?"

His wife stood perfectly still for a second. Then she grasped the edge of the kitchen counter to steady herself. "What did you say?" she asked slowly.

"How would you like to buy a new suit?"

Mary looked at him sharply now. "That's what I thought you said. Joe, are you feeling sick?"

"Why, no I'm not sick. I feel fine. Why?"

Mary looked a little mystified. "Usually I have to ask for months

(Continued on page 28)


Lilly

REPORT TO CATTLE FEEDERS

# 'Stilbosol' proves its worth all over the country...

During the past year, a number of state agricultural experiment stations have reported their findings on the use of diethylstilbestrol in cattle rations.

Experiments like these show how cattle fattening rations containing 'Stilbosol'* can improve gains and boost profits over the same rations without 'Stilbosol.'

Notice the consistency of the results. Most of the extra gains were over 20%, while savings in feed costs were above 10%. If you aren't feeding a supplement fortified with 'Stilbosol' to your market cattle, you should consider doing it. Your feed supplier can furnish you with 'Stilbosol'-fortified supplements to help you boost gains and cut cost of gain.

**Texas A. & M. Reports**
*(Steers on high grain ration for 140 days)*

| Amt. of Diethylstilbestrol | None | 10 mg. |
|---|---|---|
| No. steers | 5 | 5 |
| Beginning wt. (avg.) | 759 lbs. | 756 lbs. |
| Final wt. (avg.) | 1069 lbs. | 1156 lbs. |
| Avg. daily gain | 2.21 lbs. | 2.86 lb. |
| % increase daily gain | — | 29.4% |
| % savings in feed cost | — | 19.4% |

Extra gain 29.4%
Cuts cost 19.4%

**Michigan State College Reports**
*(Steers on corn silage for 98 days)*

| Amt. of Diethylstilbestrol | None | 10 mg. |
|---|---|---|
| No. steers | 14 | 14 |
| Beginning wt. (avg.) | 897 lbs. | 903 lbs. |
| Final wt. (avg.) | 1122 lbs. | 1158 lbs. |
| Avg. daily gain | 2.3 lbs. | 2.6 lbs. |
| % increase daily gain | — | 13.0% |
| % savings in feed cost | — | 11.6% |

Extra gain 13.0%
Cuts cost 11.6%

**Colorado A. & M. Reports**
*(Steers on high grain ration for 84 days)*

| Amt. of Diethylstilbestrol | None | 10 mg. |
|---|---|---|
| No. steers | 9 | 8 |
| Beginning wt. (avg.) | 756 lbs. | 749 lbs. |
| Final wt. (avg.) | 951 lbs. | 990 lbs. |
| Avg. daily gain | 2.3 lbs. | 2.9 lbs. |
| % increase daily gain | — | 26.0% |
| % savings in feed cost | — | 20.6% |

Extra gain 26.0%
Cuts cost 20.6%

**University of Nebraska Reports**
*(Steers on high grain ration for 112 days)*

| Amt. of Diethylstilbestrol | None | 10 mg. |
|---|---|---|
| No. steers | 8 | 8 |
| Beginning wt. (avg.) | 1051 lbs. | 1050 lbs. |
| Final wt. (avg.) | 1286 lbs. | 1327 lbs. |
| Avg. daily gain | 2.09 lbs. | 2.47 lbs. |
| % increase daily gain | — | 18.2% |
| % savings in feed cost | — | 11.0% |

Extra gain 18.2%
Cuts cost 11.0%

**Purdue University Reports**
*(Steers on roughage ration for 98 days)*

| Amt. of Diethylstilbestrol | None | 10 mg. |
|---|---|---|
| No. steers | 9 | 9 |
| Beginning wt. (avg.) | 754 lbs. | 751 lbs. |
| Final wt. (avg.) | 1019 lbs. | 1074 lbs. |
| Avg. daily gain | 2.71 lbs. | 3.30 lbs. |
| % increase daily gain | — | 21.8% |
| % savings in feed cost | — | 17.6% |

Extra gain 21.8%
Cuts cost 17.6%

**Ohio State University Reports**
*(Steers on high grain ration for 84 days)*

| Amt. of Diethylstilbestrol | None | 10 mg. |
|---|---|---|
| No. steers | 7 | 7 |
| Beginning wt. (avg.) | 720 lbs. | 719 lbs. |
| Final wt. (avg.) | 919 lbs. | 959 lbs. |
| Avg. daily gain | 2.37 lbs. | 2.85 lbs. |
| % increase daily gain | — | 20.0% |
| % savings in feed cost | — | 16.4% |

Extra gain 20.0%
Cuts cost 16.4%

**University of Tennessee Reports**
*(Steers on roughage ration for 98 days)*

| Amt. of Diethylstilbestrol | None | 10 mg. |
|---|---|---|
| No. steers | 8 | 8 |
| Beginning wt. (avg.) | 1006 lbs. | 1028 lbs. |
| Final wt. (avg.) | 1133 lbs. | 1206 lbs. |
| Avg. daily gain | 1.30 lbs. | 1.81 lbs. |
| % increase daily gain | — | 39.2% |
| % savings in feed cost | — | 20.3% |

Extra gain 39.2%
Cuts cost 20.3%

**Iowa State College Reports**
*(Steers on high grain ration for 112 days)*

| Amt. of Diethylstilbestrol | None | 11 mg. |
|---|---|---|
| No. steers | 8 | 8 |
| Beginning wt. (avg.) | 691 lbs. | 696 lbs. |
| Final wt. (avg.) | 941 lbs. | 1039 lbs. |
| Avg. daily gain | 2.23 lbs. | 3.06 lbs. |
| % increase daily gain | — | 37.2% |
| % savings in feed cost | — | 17.2% |

Extra gain 37.2%
Cuts cost 17.2%

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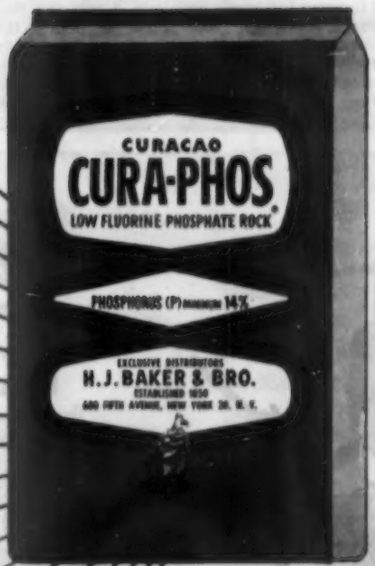


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*What's New in Feeding*

# Putting Feed Research to Work

## Beef Cattle Feeding Investigations, 1954-55

● W. W. Duitsman and F. B. Kessler, Fort Hays Branch, Kansas Agricultural Experiment Station, Circular 322.

The following reports concerned with the feeding of antibiotics and stilbestrol to feeder calves and cattle are of considerable interest because they have in some instances been conducted over a period of years. This, of course, increases the reliability of the results.

**Antibiotics in Wintering Rations of Steer Calves**—In one test, antibiotics were tested as supplements to a wintering ration fed to calves for 122 days. This test was conducted once each year for a three-year period. Ten calves averaging slightly less than 500 lb. at the start of the test were used in each lot.

The average daily control ration consisted of about 36.5 lb. of Ellis silage, 1.75 lb. Midland milo and 1.25 lb. of cottonseed meal. Another lot was fed the same control ration except that it received 45 mg. of Aureomycin per head daily. The cattle fed Aureomycin consumed 35.7 lb. of silage daily.

(A third lot was fed bacitracin, but it may be noted that bacitracin, while used for swine and poultry, is not now generally used in cattle feeding. In line with this, the data for the bacitracin-fed cattle did not differ greatly from the data for the controls in this test or in another test reviewed below.)

The average three-year daily gain was 1.48 lb. for the control and 1.64 lb. for the Aureomycin lot. The costs of feed required to produce 100 lb. of gain were $17.05 for the control and $15.58 for the Aureomycin lot.

The average of three years' testing has shown that Aureomycin fed at 45 mg. per head daily increased daily gains about 10% or 0.16 lb. per head. The cost of gains per 100 lb. of gain was decreased $1.47 by the Aureomycin feeding.

The daily cost of feeding the supplemental Aureomycin was 0.6¢.

**Value of Antibiotics in a Wintering Fattening Ration for Calves**—In this test 10 calves averaging 466 lb. each were used in each lot. In the wintering phase of the test (168 days), the average control ration consisted of 36.1 lb. of Ellis silage, 1.75 lb. Midland milo and 1.25 lb. of cottonseed meal. Another lot was fed the same ration except that the silage consumption was reduced to 32-33 lb. daily. In addition, this lot received 45 mg. of Aureomycin per head daily. (As noted above, a third lot was fed bacitracin.)

The average daily gain and cost of 100 lb. of gain were 1.45 lb. and $14.43 for the control and 1.48 lb. and $13.77 for the Aureomycin lot.

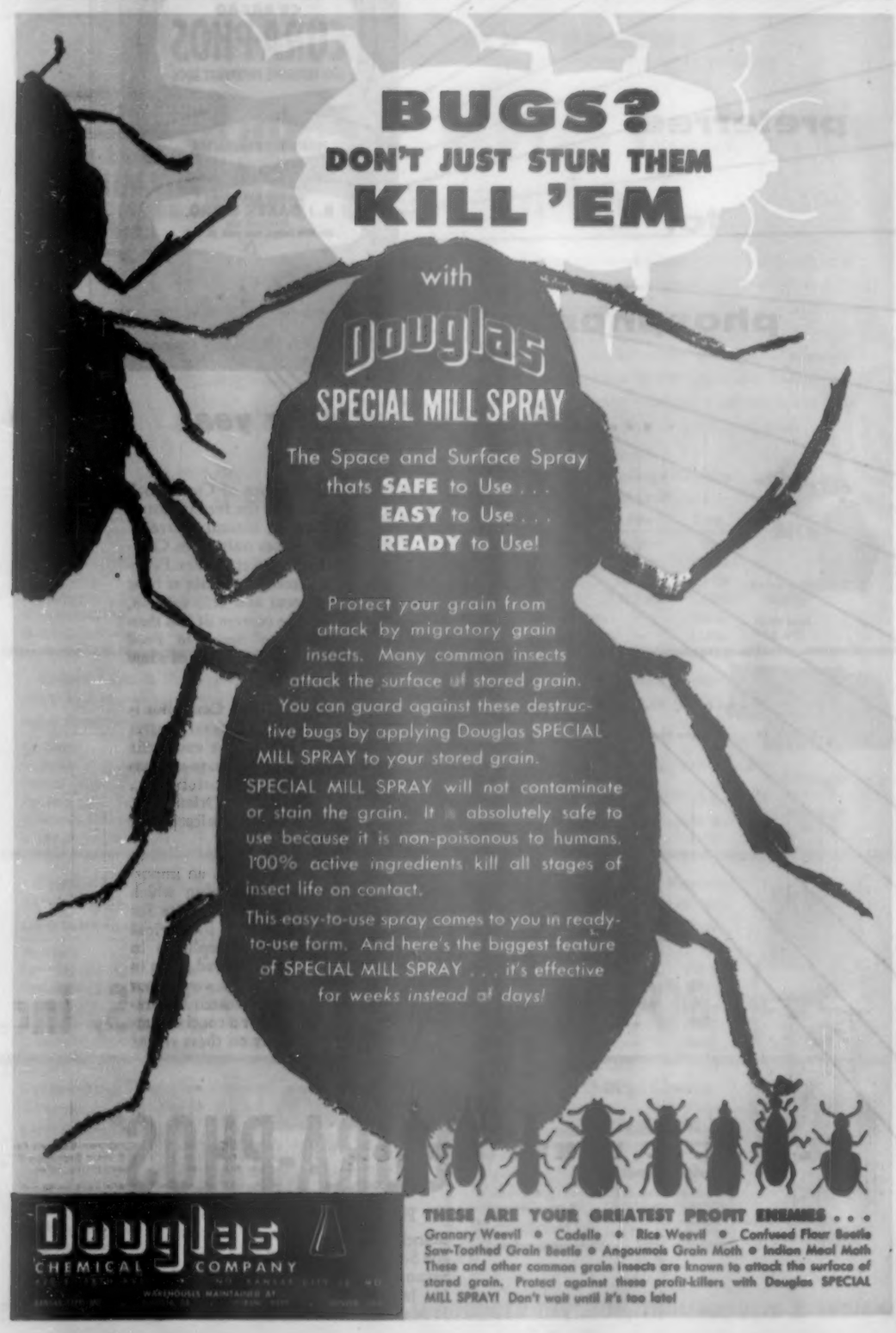
During the full-feeding phase (121 days) of this study, the cattle used in the wintering phase were fed an average daily ration of 23-26 lb. of Ellis silage, 9.88 lb. of Midland milo and 6 lb. of ground alfalfa. The antibiotic was raised from 45 mg. to 72 mg. per head daily.

In this phase of the study, the cattle gained at the rate of 1.99 lb. for the control and 2.13 lb. daily for the Aureomycin lot. The respective costs of 100 lb. of gain were $18.70 and $17.57. The selling price per cwt. was $23.40 for the control and $23.70 for the antibiotic lot. Dressing percentage was 59.6% for the control steers and 61.05% for the Aureomycin steers.

In this test, the control steers consumed slightly more silage than the antibiotic-fed steers in both phases of the study. The steers in the control and Aureomycin lots had a slight reduction in their growth rate during the month of June.

Analyses of portions of the carcasses disclosed no antibiotic residue.

**Aureomycin and Aureomycin and Stilbestrol for Steer Calves on Ellis Silage, Milo and Cottonseed Meal**—In this test three lots of 10 calves each were fed 1.25 lb. of cottonseed meal, 1.75 of milo and Ellis silage free choice. In addition, one lot was fed supplemental Aureomycin at the rate of 45 mg. per head daily while the third lot was fed supplemental Aureomycin (45 mg. per head daily)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and 10 mg. per head daily of stilbestrol. The daily silage consumption varied very little in the different lots. It was about 33 lb. daily. The control and antibiotic calves were started on Nov. 17, 1954, and continued on test for 122 days. The Aureomycin-stilbestrol calves were started on test on Dec. 18, 1954, and continued for 91 days. All lots were taken off their ration on March 18, 1955.

The results were not conclusive, as the three lots were not on feed the same length of time. Realizing that no definite conclusions could be drawn from the data, the authors did report the daily gains to be 1.47, 1.69 and 1.73 lb., respectively, for the control, Aureomycin and Aureomycin-stilbestrol lots. The corresponding costs per 100 lb. of gain were $15.99, $14.24 and $14.51. No undesirable characteristics were observed in any of the calves.

**COMMENTS:**

The results of the above Kansas tests demonstrate that Aureomycin definitely stimulates gains and reduces the cost of gains when used to supplement a roughage type of ration. This growth stimulation amounts to about 10% of normal gains with a similar feed saving.

Contrary to the terminology used by the Kansas researchers, the fattening ration used in the second experiment reported above would not generally be considered a good fattening and/or finishing ration. Most cattle feeders in the Corn Belt would feed at least 15 lb. of grain daily with a corresponding reduction in roughage during the fattening period. Therefore, the results obtained from Aureomycin cannot be applied to the common type of fattening ration used in the Corn Belt. There are some differences of opinion among nutritionists as to whether antibiotics stimulate gains of cattle fed a well balanced high grain type of fattening ration. The results of this test cannot be used as evidence either way since it is about half way between a high-roughage and a high-grain ration.

It is surprising, in view of the present ruminant knowledge, that the Kansas tests were not designed to include a well balanced supplement. This was particularly true in the fattening period of the experiment reported above. It is hard to say whether the same results would have been obtained if a well balanced supplement had been used. The results of the Kansas test are in line with those obtained at other agricultural experiment stations and commercial feeding tests. Generally, supplemental Aureomycin and Terramycin have resulted in about 10% greater gains and feed saving when used to supplement well balanced roughage-type rations. Whether stilbestrol will pay for itself when used in combination with antibiotics as a roughage ration supplement is not yet considered definite.

There appears to be little question that stilbestrol will increase the rate and efficiency of gain of cattle fed a high grain ration. Whether antibiotics fed to cattle receiving a high grain ration supplemented with stilbestrol will pay for themselves in increased efficiency of production is not yet regarded as conclusive.

Antibiotic feeding seems to be of some benefit as an aid in preventing certain types of diseases in cattle.

The commonly accepted level of antibiotic supplementation of cattle rations as a growth stimulant is 10 mg. per 100 lb. liveweight daily. In order to put this on a practical basis, most cattle supplements should be formulated so that the recommended daily feed will supply 70-75 mg.


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## JOE BROOKS

(Continued from page 24)

when I want some new clothes, or dig up a couple of business ideas for you. I'm—I'm not used to having you come right out and tell me I can have a new suit. It's like a drink of scotch on an empty stomach."

"I didn't say you could buy a new suit, dear. I said 'do you want a new suit?' "

"Well, of course I want a new suit. What woman wouldn't? What's the difference?"

Joe chuckled. "Well, I'm offering you an opportunity to earn a new suit. Let's put it that way."

Mary's enthusiasm waned a little. "Oh, so that's it. You want me to do something for it."

Joe nodded. "You see, Mary, ever since I bought that camera to take color pictures two years ago, and a slide projector, I have built a dandy collection of feed and fertilizer scene pictures."

"And those slides have helped you sell a lot of feed and fertilizer," Mary said.

"That's right, but the lure of new things always fades. Farmers are not quite so anxious to see those feed and fertilizer slides as they once were—even though I get new slides about crop yields, ways of storing feed, etc."

"Well, that's only natural. We don't watch television as much as when we first got our set either. But we still watch it. And farmers will still want to look at some feed and fertilizer slides, but perhaps not as much as when you first got the projector."

"I know that," Joe said, "but I want to add punch to my colored slide collection, to give it new appeal."

Mary emptied her plastic dishpan and began wiping out the moisture after rinsing. "How?"

"Well," Joe said, wiping the stainless steel coffee maker slowly, "I thought that you might have the time to take the car, load the camera with color film and roam around the trade area on sunny days and take some extra pictures for me."

"Pictures of what? You said you had enough feed and fertilizer pictures for the time being."

"I have. I want you to take good color shots of country churches, country schools and other historical places in the area. We've got two covered bridges in this region. Folks like to look at pictures like that."

"But how will such pictures help you sell feed?" Mary asked.

Joe smiled. "Well, I can get such pictures for about 12¢ each and I can show them at farm meetings along with my feed and fertilizer pictures. Those historical shots will add punch to my slide collection."

"Oh, I see," Mary said. "Those extra slides will put seasoning in—just as I do in my meats."

"I think so," declared Joe. "If you see a bunch of kids at recess at a rural school, get some close-ups. I'll also give you some indoor film and flash bulbs and maybe a rural teacher will let you take a picture of a class at work on a special project, maybe cutting out Thanksgiving turkeys, Christmas decorations or Easter bunnies. Get the idea?"

### Mary Likes the Idea

Mary nodded, her eyes bright. "Why, Joe, this is a good idea. I'd love to do it. And farm folks would flock to see a slide showing especially when some of their churches, schools and children are in it."

"That's it," Joe said, "and I might even get invited to show my rural slide collection to some country school, or church or club. Who knows?"

"I'll do it, Joe," Mary said, "and I'll bet you I'll get a lot of good farm recipes, too, and maybe get some shots of farm women making cakes, pies or some other baked delicacies."

"Go ahead," Joe said. "I think this will be excellent customer relations, Mary. And you'll get a suit for it, too."

"Oh," said Mary, "for a minute I forgot about the suit. I have a dandy picked out at the Leader—for months now. Only $67.50."

Joe blinked hard. "Wake me up early tomorrow, dear. I want to start putting in more hours at the feed mill. Expenses are climbing and I've got to put in extra time to meet them."


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**In Britain**

# Controlled Feeding Makes Better Pigs

**By Peter Giles**

**EDITOR'S NOTE: The trend in the U.S. toward leaner market hogs is making headway. Such a trend is not new in hog production. In Britain there has been a disadvantage from a selling point of view in excessive hog fat. An explanation of controlled feeding in an attempt to control hog fat is contained in the following article by Peter Giles, English farm writer. The article has been made available through the British Information Services, an agency of the British government.**

v v

American farmers trying to breed some of the fat off their pigs may be interested to hear of progress being made in Britain in improving livestock through controlled feeding.

In a word it has been found that rationed pigs not only cost less in feedingstuffs but are better animals and produce better bacon and bigger profits. And if their feeding is controlled by the use of a mechanical feeder, it is even possible that labor costs may be reduced. The pig still feeds itself; but it does not overfeed.

At a recent national farm show in Britain, one of the Ministry of Agriculture exhibits contrasted in two adjacent pens, young pigs which had been allowed to eat their fill with those whose maximum daily allowance had been controlled at 6 lb. a head—and the rationed pigs were the better animals, as carcass exhibits proved.

Why was controlled feeding started in Britain, and how may British experience help the American producer? It is partly a question of tradition. In England the Wiltshire side is cured and sold with the skin attached; in America it is trimmed before being sold. In Britain, therefore, excessive fat is a disadvantage from a selling point of view; in America, provided there is a market for the trimmed fat, it does not matter.

Further, in Britain most pig food is bought from feed merchants and as such is an already balanced ration. And since—at any rate until recently —there has been sufficient labor for controlled hand feeding the tendency has been to feed pigs slightly less than they would like, and thus save feedingstuffs and produce better carcasses too.

In America the pig breeder, using home grown and starchy foods and having perhaps even less labor than his British counterpart, has until recently allowed his pigs to eat their fill—the excess fat could always be sold.

But with the coming of soapless detergents, less fat is needed by the soap manufacturers and the American pig breeder, although for different reasons, is said to be tending now to follow the example of his British counterparts, and control feeding for better quality carcasses.

In calculating a pig's ration there is of course an over-all need to ensure that the proportions of fats, carbohydrates, proteins, minerals, vitamins and so on are correct. Particular attention must be given to protein and mineral requirements since pigs grow more quickly than other farm animals and are usually slaughtered in active growth. Correct management is also assumed: the piggery, for example, must not be so hot that the animals pant for breath; there must be sufficient feeding space, for young pigs with insufficient trough space can waste up to 1 lb. of starch equivalent a day if they have to struggle for their food.

If attention to these matters is assumed, then rations are calculated according to three basic factors: first an allowance for maintenance; then an allowance for growth; and finally an allowance of digestible protein. The growth allowance is additional to the maintenance allowance and varies according to the rate at which weight increases. It is calculated according to a fourth factor—the amount of meal the pig needs at a given age to produce a liveweight increase of one pound. This is a vital factor, varying from 0.7 lb. of meal in the case of the 50-lb. pig to 3.5 lb. in the case of the 300-pounder.

### Typical Figures

Here are typical ration figures for a 200-pounder. It is allowed 3.6 lb. of a standard compound meal a day for maintenance and 3.3 lb. for growth. It is assumed that these two allowances between them contain the 0.6 lb. of digestible protein needed. Now since it is known that a 200-pounder needs 2.0 lb. meal for every one pound increase in weight, this growth allowance of 3.3 lb. will produce an increase of 3.3/2.0 lb. a day—or some 1.7 lb.

The following table shows suggested rations for pigs between 50 and 300 lb. live weight. All figures are in pounds and all, save those in the last column, for a standard meal mixture; the last column is for the appropriate form of feedingstuff.

The figures in the fourth column are entirely relative; together with the figures for the growth, they allow the breeder to assess live weight increases—or, having already decided what increases he must aim for, to assess daily growth allowances of food. All meals are cereal and cereal products, and are assumed to have a 67-70% starch equivalent; fishmeal is usually added where necessary to provide protein, lime and chlorine.

| Live weight | Maintenance | Growth | Meal needed for each lb. increase | Protein requirement |
|---|---|---|---|---|
| 50 | 1.5 | 0.5/1.0 | 0.7 | 0.3 |
| 100 | 2.9 | 1.1/1.6 | 1.0 | 0.5 |
| 150 | 3.3 | 2.7 | 1.5 | 0.6 |
| 200 | 3.6 | 3.3 | 2.0 | 0.6 |
| 250 | 3.8 | 3.7 | 2.9 | 0.7 |
| 300 | 4.1 | 3.9 | 3.5 | 0.7 |

### A Guide

The figures quoted are offered simply as a guide. Individual breeders vary the amount of food according to a number of factors; and in general controlled feeding is not usually practiced until the pig is between three and four months old. During the first four months, when the pig grows quickest, many breeders relax controlled feeding and allow piglets to eat their fill, one rough and ready guide being to allow pigs under, say, 14 weeks to eat to appetite; and if


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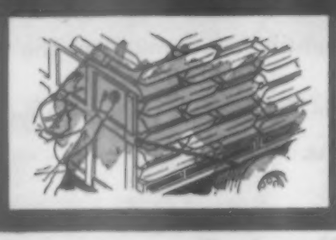

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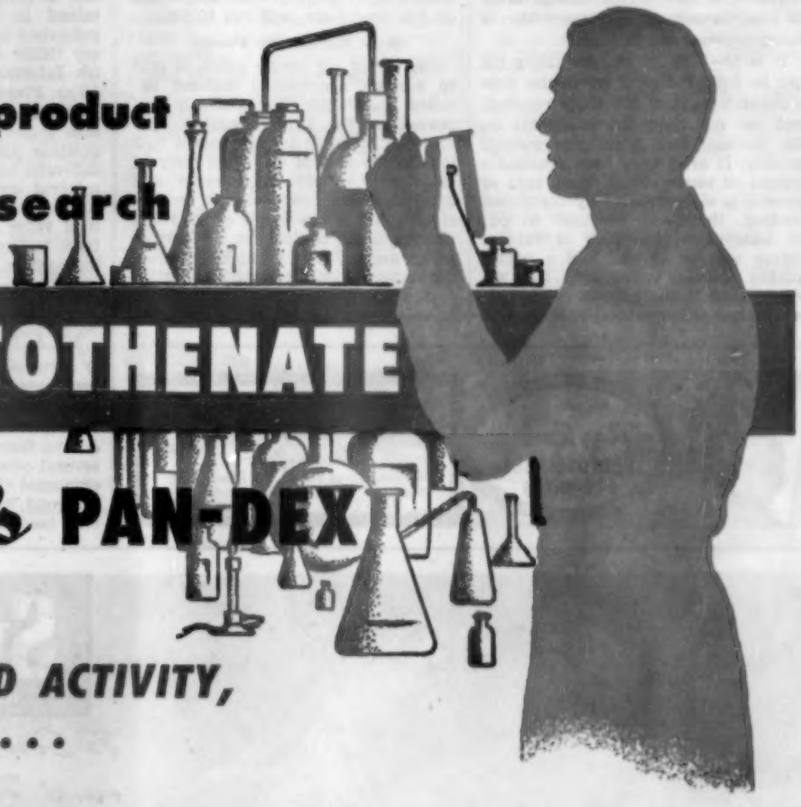

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## MORE PANTOTHENIC ACID ACTIVITY, PLUS A CHOLINE BONUS... AT NO ADDED COST!

Here is more fortification for your pantothenic acid dollar. In each pound of DAWE'S PAN-DEX 32, you get the equivalent vitamin activity of 34 grams calcium pantothenate dextrorotatory, plus .4 pound of 25% choline chloride dry mix . . . a 10% greater value at current prices.

CHOLINE PANTOTHENATE, source of pantothenic acid and choline in DAWE'S PAN-DEX, is the first chemical linkage of these two important B-vitamins. It is an achievement of Dawe's basic research in product development and covered by U. S. patent No. 2,653,968.

CHOLINE PANTOTHENATE, dispersed in soybean oil meal and corn distillers' dried grains, is available to feed manufacturers under the trade name DAWE'S PAN-DEX in two standard potencies.

**PAN-DEX 32**—Each pound contains the vitamin activity of:
32,000 milligrams d. pantothenic acid, equivalent to 34,000 milligrams d. calcium pantothenate, and 45,000 milligrams choline chloride.

**PAN-DEX 16**—Each pound contains the vitamin activity of:
16,000 milligrams d. pantothenic acid, equivalent to 17,000 milligrams d. calcium pantothenate, and 22,500 milligrams choline chloride.

*Also available in concentrated liquid form.*

Use DAWE'S PAN-DEX to add more economically the increased levels of pantothenic acid recommended for today's feed efficiency. Shipments may be made from Dawe's plants in Chicago and Peoria, Illinois, and Auburn, Washington, or from conveniently located warehouse stocks across the country. Write for sample and quotations.

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anything is left in the trough after 20 min., to assume that the ration is too generous, and reduce it.

It is true that a late-maturing pig can be fully fed right up to the time a bacon weight of 200 lb. is reached, and yet not have too much fat on the carcass. But many pigs mature quickly. If after they have reached a weight of some 120 lb. their rate of growth is slowed down by controlled feeding, they will continue to put on lean meat; the rate of fat increase will be slowed and a better quality carcass produced. On the other hand if the growth of the pig is stunted when it is young it will have a short small frame; and if put on full feed later, will run to fat.

### New British Pig Feeder

One robot pig feeder which is said to restrict overfeeding without detailed supervision has recently appeared on the British market. The unit can be set to deliver from ½ to 2 lb. feed to pigs at any time interval from two to six hours night and day. About the same size as an upright piano, it has a row of six stalls running along one side at the bottom which are fed from a hopper containing enough food for eight pigs for up to a week.

An admirable study of British practice in controlled pig feeding is contained in "Rations for Livestock" published by Her Majesty's Stationery Office and obtainable from British Information Services, 30 Rockefeller Plaza, New York 20, for 86¢ post paid. It has a particularly valuable series of tables listing the composition and nutritive value of 573 different basic feedingstuffs and the mineral contents of over 100. Such tables show how to buy the most food value for least money; and are basic to any controlled livestock feeding system.

### BUYS KANSAS STORE

IOLA, KANSAS—The Allen County Feed & Produce store here has been purchased by Jack Mulford, Osawatomie, Kansas. The firm was formerly operated by A. H. Fawkes & Son, Garnett, Kansas. For the past several years Mr. Mulford has been employed by the Missouri Pacific Railroad but previously was in the feed business.

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## Cornell Studies Cost Of Raising Pullets

ITHACA, N.Y.—Feed, labor, and initial cost of chicks represent more than 80% of the total cost of raising pullets to maturity, according to Cornell University surveys.

Two surveys, conducted by Jon Tobey of the Cornell department of agricultural economics, were taken during the fall of 1954 and the winter of 1954-55 on 37 central New York farms.

Total cost of raising a chick in the fall survey was $2.13, and the winter cost was $1.77. About half of the difference was due to a reduction in feed cost.

Feed accounted for 50% of the cost, varying in the two surveys from 90¢ a pullet in the winter study to $1.09 in the fall survey. The range in feed costs was wide in both studies, varying from 84¢ to $1.32 a bird in the fall to $1.14 in the winter.

Labor costs represented 12% of the total. In the fall survey, it was 25¢ a pullet compared to 19¢ in the winter. Tobey said the average number of chicks started in the winter study was slightly larger than in the fall and the mortality was 4% greater.

Because it takes little more labor to care for more birds, cost of labor in the winter survey is spread over a greater number of birds and thus is lower.

Mortality in the winter study was 10%, ranging from 6 to 23%, and the fall survey had a range of 5 to 50% or a 14% average. The average labor time required to care for a pullet raised to maturity was 13 minutes in the fall study and 10 minutes in the winter survey.

The fall study included 19 farms and the winter survey, 18. Most of the farms studied were full-time commercial poultry enterprises producing eggs for the wholesale market. Some had other enterprises such as dairy, beef, and grain.

## Quad State Convention Planned for March

SIOUX CITY, IOWA—The Quad State Convention will be held March 18-19 in the Martin Hotel, Sioux City. The meeting is sponsored by the Sioux City Grain, Feed & Seed Assn.

N. G. Nichols, 901 Missouri River Rd., Sioux City, is chairman.

### ADDS MIXING SERVICE

LIVINGSTON, TEXAS—The Jackson Farm & Electric Supply Co., Livingston, which has been a feed distributor here for several years, has now added equipment for custom feed mixing. The new plant was designed and equipped by the Fort Worth Steel & Machinery Co., one of the first installations of the new line of feed mill equipment being manufactured by that firm. M. S. Jackson is manager of the Livingston firm.

NO PIN FEATHERS here

Buying quality chicken for an enjoyable dinner is easy and trouble-free. You simply look for the processed, well-packaged *and branded* product.

Buying animal protein concentrates is much the same. Quality animal protein concentrates are labeled and sold by brand name. To be sure of quality, buy the bags labeled Swift.

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# More Flock Replacement Chickens Expected to Be Raised in 1956

WASHINGTON—The nation's laying flock on Jan. 1, 1956, is likely to be 2 or 3% smaller than a year earlier, but an increase is expected in the number of chickens to be raised for flock replacement in 1956.

This was noted in a recent U.S. Department of Agriculture report on the poultry outlook for next year. (An earlier story on the general poultry outlook appeared in the Nov. 26 issue of Feedstuffs.)

The dip in the number of layers at the start of 1956 results from the decreased number of young chickens raised this year.

But in 1956, because of this year's rise in the egg-feed price ratio over the past year, the most likely prospect is that the number of chickens raised for flock replacement will be moderately above the 1955 total of 524 million but below the 620 million raised in 1954. In general, the egg-feed ratio has been considerably more favorable than a year ago.

If the Dec. 31 ratio of pullets saved to chickens raised is average and if allowance is made for the larger number of old hens which will have to be replaced, 3 or 4% more replacement chickens could be raised in 1956 without increasing the number of layers during the fall and winter of 1956 above 1955 levels. The increase, however, is likely to be greater.

Even if the number of chickens raised exceeds 1955 by as much as 10%, fewer chickens would be raised in 1956 than in 1954, and fewer than in any other year of record prior to 1955. However, because of the upward trends in numbers of pullets saved per 100 chickens raised would result in larger egg supplies in the last quarter of 1956 than in the same period of other recent years.

### COW UTILIZES NUTRIENTS

COLLEGE STATION, TEXAS — A good dairy cow yields in her milk about 29% of the digestible nutrients in her feed, say dairy specialists at Texas A&M College. She uses about 47% of her feed for body maintenance and 24% in the work of converting food nutrients into milk.

### ALFALFA MEAL PRODUCTION (tons) October, 1955, With Comparisons

The Production & Marketing Administration reports the following statistics on alfalfa meal output:

| | Sun-cured | Dehydrated | Total |
|---|---|---|---|
| Oct., 1955* | 12,600 | 103,700 | 116,300 |
| Sept., 1955 | 13,000 | 128,900 | 141,900 |
| Oct., 1954 | 20,300 | 89,400 | 109,700 |
| Sept., 1954 | 18,600 | 165,600 | 184,200 |
| Season's total: | | | |
| April-Oct., 1955 | 104,700 | 1,069,700 | 1,174,400 |
| April-Oct., 1954 | 129,600 | 990,000 | 1,119,590 |

*Preliminary.

### Stocks of Alfalfa Meal at Producing Plants in Tons

| | | | |
|---|---|---|---|
| Oct. 31, 1955 | 4,200 | 461,900 | 466,100 |
| Sept. 30, 1955 | 4,600 | 451,300 | 455,900 |
| Oct. 31, 1954 | 4,900 | 272,700 | 277,600 |


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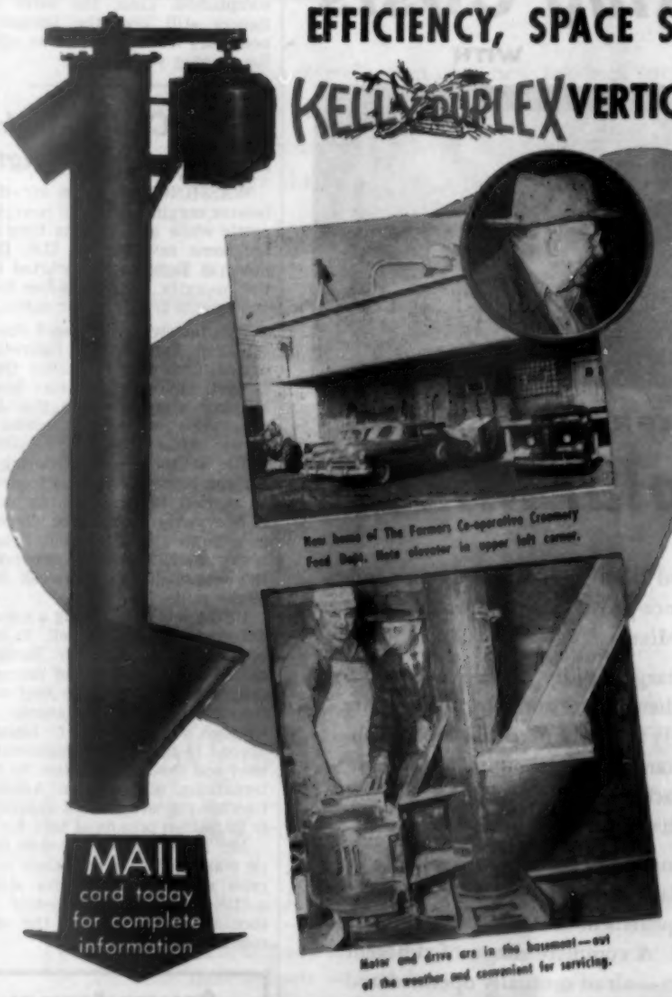

New home of The Farmers Co-operative Creamery Feed Dept. Note elevator in upper left corner.



Motor and drive are in the basement—out of the weather and convenient for servicing.

"I would recommend this machine to anyone," says Oliver Swanson of The Farmers Co-operative Creamery Co.

When the Feed Dept. of The Farmers Cooperative Creamery Co., Clear Lake, Wisconsin moved into their new concrete block mill, their plans called for a bucket elevator to be used in filling their storage bins. "However," says Mr. Swanson, "after careful consideration of the various types of conveyors available, we chose the Kelly Duplex Vertical Screw Elevator. We found that it passed through the bins with a minimum of lost space . . . that it was simple to install and convenient to service . . . and that it was so tightly constructed that there was no dirt or dust to fly around. We chose the 9" conveyor with a total length of 42 feet and driven by a 10 HP motor. This combination gives us an hourly capacity of 20 tons of corn or grain."

"All in all," says Mr. Swanson, "we are very well satisfied with this machine and would recommend it to anyone in need of this type of equipment."

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Like Mr. Swanson, hundreds of other feed mill and elevator men all over the country have found that the Kelly Duplex Vertical Screw Elevator is the modern, money-saving solution to every material handling problem.

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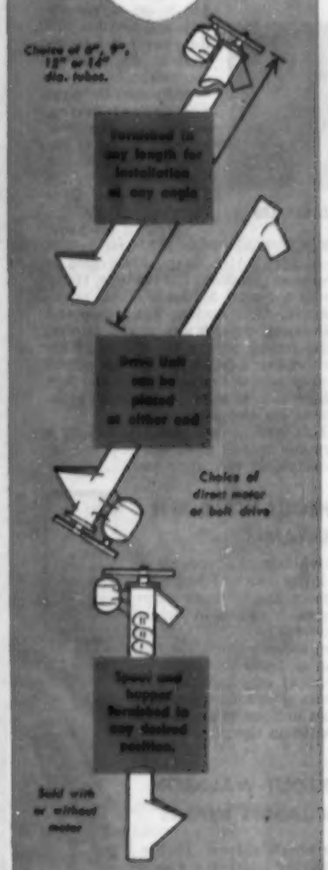
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# Possible Changes in Composition of Next Year's Turkey Crop Noted

WASHINGTON—Possible changes in the composition of the 1956 turkey crop, as compared with 1955, were noted recently by the U.S. Department of Agriculture.

As reported previously, it is expected that the total 1956 turkey crop will show an increase over this year, and could, in fact, top the record number of birds raised in 1954.

In addition to this information, there is interest in the possible proportions of light and heavy turkeys.

One of the things noted by USDA is that when turkey breeders and growers were making their plans for 1955, prices for light weight turkeys were relatively more favorable than for heavy turkeys. But now, when the industry's plans for 1956 are being formed, prices for heavy turkeys exceed last year by more than do broiler-fryer prices, and the advantage of having lightweight turkeys to sell has been reduced.

**Figures Reported**

As far as statistical indications go, there was the recent report that as of Oct. 1, flock owners intended to keep 13% more heavy breed turkeys and 7% more light breed turkeys for 1956 hatching-egg production than they kept in 1955.

From July through October, the number of heavy breed turkeys tested for pullorum was up 9% from 1954. Light breed turkeys tested were down 33% from last year.

These various figures indicate that, even though both types of turkeys show a production increase in 1956, the proportion of heavy breed birds will still be larger than this year.

However, another point to consider is the fact that Broad White turkeys, a heavy type which can be slaughtered at light weights, appear to be increasing.

Broad White turkeys, a white-feathered heavy type, were very popular in 1955, reaching 34% of the total poult hatchings in Minnesota from March through October. (Minnesota probably has a larger proportion of Broad Whites than any other state.) Part of this popularity was due to the fact that they offer growers considerable flexibility with respect to marketing weight.

**Sold at Light Weights**

Broad Whites can be marketed at weights comparable to Beltsville Small Whites, and at certain weights provide a more favorable feed-to-meat conversion rate. In addition, if the grower so chooses, the birds can be fed to weights almost as heavy as those achieved by Broad-Breasted Bronze turkeys.

The Broad Whites can be slaughtered at light weights because of their white feathers. For dark-feathered heavy breeds, the pinfeathers on the immature carcass result in an unattractive appearance.

Regarding the October report on breeder hen intentions, USDA noted that the turkey advisory committee affirmed recently that these intentions were then still valid. However, growers were warned of the danger of overproduction in 1956. If there is a reduction from these intentions before the first of the year, the intentions report served a useful purpose, as a 1956 turkey crop up to the levels indicated would considerably exceed the record 1954 crop of 65.9 million birds, which sold several cents per pound cheaper than at present.

Past experience has been that when large turkey breeding flocks have been carried into the hatching season, poult output and the number of turkey poults brooded have been almost correspondingly large.

As for the report on turkey testings noted above, USDA pointed out that up to Nov. 1 last year, only 29% of the 1954-55 testings had been accomplished. Thus, the early season figures still give the industry the necessary leeway to have an effect on the coming year's crop.

## *Heavy Cattle Market Expected to Strengthen*

WASHINGTON — In an effort to bolster sagging prices on heavyweight cattle while at the same time realizing some savings, the U.S. Department of Defense has started buying the majority of its boneless beef requirements from heavier cattle.

This fact was announced this week by Ezra Taft Benson, secretary of agriculture, who said that the U.S. Department of Agriculture has been keeping in touch with the defense department officials to advise them of the cattle marketing situation.

Mr. Benson said that during October and November, cattle feeders sent to market unusually large numbers of heavyweight cattle for which there is a limited retail outlet. Prices for heavy steers reached a low point for the season during the week of Nov. 19, he said.

USDA has been taking a number of different actions, as well, to aid the beef cattle industry, Mr. Benson disclosed. He cited a broad promotional program to move heavy beef supplies through commercial channels, efforts through employees at home and abroad to increase the exportation of beef and the authorization by the International Cooperation Administration for procurement of approximately 20 million pounds of beef for Spain.

Mr. Benson predicted that fed cattle marketings are past their seasonal peak and the market for slaughter cattle, especially for heavy steers, should strengthen in the coming months.


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Moreover, he gives you money-saving guidance on the most efficient means of fitting equipment into your mill flow...on loading and discharging.

Depend on your SPROUT-WALDRON MAN for professional advice. He's thoroughly trained to solve your problems. For example, Harry Lee is a typical Sprout-Waldron representative. After working in the shop and engineering departments at the factory, Harry started serving the millers of his territory over a decade ago. He has played a major role in designing mills and furnishing units to solve the particular problems of his own area.

This type of counselor, backed by a large engineering staff, can help you increase profits year after year.

**SPROUT-WALDRON VERTAMIX**

Provides higher ton-output at lower costs of labor, maintenance, and horsepower than any other vertical mixer. Exclusive THORO-FLO* feature makes possible the mixing of feeds that no other vertical can handle. This device gives a more thorough, more uniform mix...cuts recirculation time.

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Sprout-Waldron double agitator units are preferred by largest feed manufacturers. Capacities up to 60 tons per hour. Two slow-speed agitators have adjustable paddles. Smaller slow-speed unit designed especially for custom millers.

When high-speed agitators are desired, the Sprout-Waldron DeLuxe Coldmix is recommended for medium and large mills, the smaller Customix for custom millers.

**AUTOMATIC PUSH-BUTTON MIXING**

The most advanced continuous batch-mixing systems with automatic push-button controls are being built today at Sprout-Waldron. They can be equipped with automatic, pre-set controls for formula building and mixing. Ask your SPROUT-WALDRON MAN for details.

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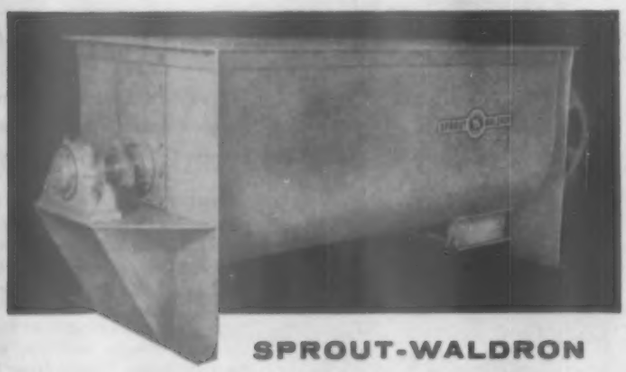

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Sprout-Waldron Horizontal Mixers are available in a wide range of standard sizes and specially-designed units to meet every requirement...with agitators to suit materials being mixed. A complete range of different types of discharge gates—air or manually operated and located to conform to plant layout—is available. Mixer surge bins, scale hoppers, complete mixing systems are all designed and furnished by Sprout-Waldron, resulting in an installation with low power costs, minimum maintenance, and a single responsibility.

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# Inside Information on NiCarbazin

No. 2 in a series

With the introduction of a new product such as NICARBAZIN, many technical questions arise. To answer these questions for the feed industry, Merck research, production, and sales executives hold regular round-table discussions. What follows is a report of the answers these men gave at a recent meeting to questions of broad interest to the trade.

**Q. How does NICARBAZIN differ from other coccidiostats?**

**A.** *Research Chemist:* It is unique in chemical structure and in the type of protection it provides. NICARBAZIN does what other coccidiostats were not able to do. It can actually cut coccidiosis losses to zero—rather than just cutting down the number of birds affected with the disease. In addition, coxy tissue damage and bloody droppings are practically eliminated.

★ ★ ★

**Q. Is NICARBAZIN in feeds as nontoxic for other farm animals as it is for poultry?**

**A.** *Pathologist:* All animals tested tolerate NICARBAZIN satisfactorily. Hogs, for example, have suffered no ill effects—over a period of several months—from a daily food intake of eight pounds containing one per cent of NICARBAZIN.

**Q. Will NICARBAZIN separate from other components in a feed after proper mixing?**

**A.** *Analytical Chemist:* Tests indicate that there is little or no segregation of the active ingredient in NICARBAZIN MIXTURE 25% when incorporated into feeds according to directions.

★ ★ ★

**Q. Is there a reduction in overall mortality, as well as a drop in coccidiosis mortality, when NICARBAZIN is used?**

**A.** *Veterinarian:* Several poultry diseases are caused by secondary infections which may develop in birds already weakened by such conditions as coccidiosis. Because NICARBAZIN practically eliminates tissue damage, NICARBAZIN-protected birds are better able to resist the secondary infections.

**Q. Does NICARBAZIN affect fertility and egg production in replacement flocks?**

**A.** *Veterinarian:* NICARBAZIN may be fed until birds are 18 to 20 weeks of age, without adverse effect on egg production or fertility.

★ ★ ★

**Q. What other benefits may be expected after NICARBAZIN removes the coccidiosis problem?**

**A.** *Veterinarian:* Birds should show a gain in feed efficiency. In addition, they will weigh more, dress out heavier, and show a better fleshing color. These benefits mean production costs will be cut and birds will command better market prices.

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**NiCarbazin Means No Coccidiosis Problems**

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# Research for Higher Quality And Lower Cost Dog Foods

**By Dr. C. M. McCay**

**EDITOR'S NOTE: Solutions to problems of dog nutrition are slow in coming because little money is spent for research, according to Dr. C. M. McCay, professor of nutrition, animal husbandry department, Cornell University. In the accompanying article, which is the text of a talk he gave at the recent Chicago dog food convention of the American Feed Manufacturers Assn., Dr. McCay outlines some of these nutritional problems and places the burden for finding answers to them on the dog feed industry.**

For 20 years we have struggled with the problems of improving commercial dog feeds. Throughout the industry is a virile interest in enhancing the quality of dog feeds but advancement has really proceeded at something less than a snail's pace.

As a whole the industry is alert to acquire new knowledge but in the past it has wanted this information to be provided free. In the case of all common livestock there is a vast reservoir of knowledge that seems free because it is derived from laboratories that are tax supported. Vast sums are provided by the federal and state governments for the support of nutrition studies with cows, pigs, poultry and other livestock but almost no support for studies with dogs. The dog is not regarded as important economically and hence deans of agricultural colleges and administrative officials in government will never face legislatures with requests for funds to support research with dogs.

Time and again we have attempted to educate administrative officers to the important place the dog fills in consuming agricultural surpluses but we have never made the slightest progress. One might think the fact that a dog consumes the inedible portion of cows such as the udders would make an economist realize that this ultimately upgrades the value of a cull cow to a farmer. One might think that any economist might estimate the amount of surplus commodities such as milk, corn, and wheat that are eaten by dogs but if such estimates have been made they have been ineffective in gaining tax support for dog research.

### Research Funds Needed

If the retail value of dog feeds exceed $100 million a year, one might reason that this industry would invest 1 to 4% of this sum in basic research like other industries. Does the dog industry do it? No.

Hence without government supported research and with limited support from the industry itself there is slow progress and much misinformation. The misinformation either comes from the fact that someone develops a new and untested ingredient that he sells by art or that answers to basic problems are not sound because they are derived from test upon other species such as rats, chickens or swine. The dog is not a rat and most sound information must come from tests upon dogs, themselves. Thus a kennel owner may write and ask us about the value of pig lungs in the feeding of dogs. We reply with an answer based upon tests with rats which we made some years ago. Only during the past summer have we run real digestion trials with dogs.

A few large producers of dog feeds maintain test kennels but the research that can be done is usually restricted because they are constantly subject to visits either from members of their own official staff or dog producers. Drastic tests may produce emaciated or sick dogs. Such sights do not afford good advertising for a specific dog feed no matter how justified and how valid the basic research.

### Species Used for Testing

During the past 20 years we have used many generations of beagles in our studies. From the point of view of housing and handling this breed is very satisfactory but there is much variability within this breed when one performs growth studies with puppies. Up until three months of age the opposite sexes grow at the same rate. This is an asset in establishing experimental groups. The beagle gets adequate exercise in a pen that is 4 ft. square. This simplifies the problem of parasite control.

During the past 20 years we have made some use of Great Danes, German Shepherds, Basset Hounds, Cocker Spaniels and Cairn Terriers. From time to time in comparative work we have used Salukis, Dalmatians, and a miscellaneous assortment of old dogs that included a Manchester, St. Bernard, Boxer and others in our home for aged dogs. For our old age work we have accepted any purebred dog that was registered and had reached the age of seven years.

None of our comparative studies has ever indicated that there is a real difference between breeds in the digestion and absorption of nutrients. There is a substantial difference in the calory requirements of different breeds since some are constantly jumping around like the Salukis while others like the Bassets are quite lethargic.

Old dogs assimilate most nutrients

(Continued on page 58)

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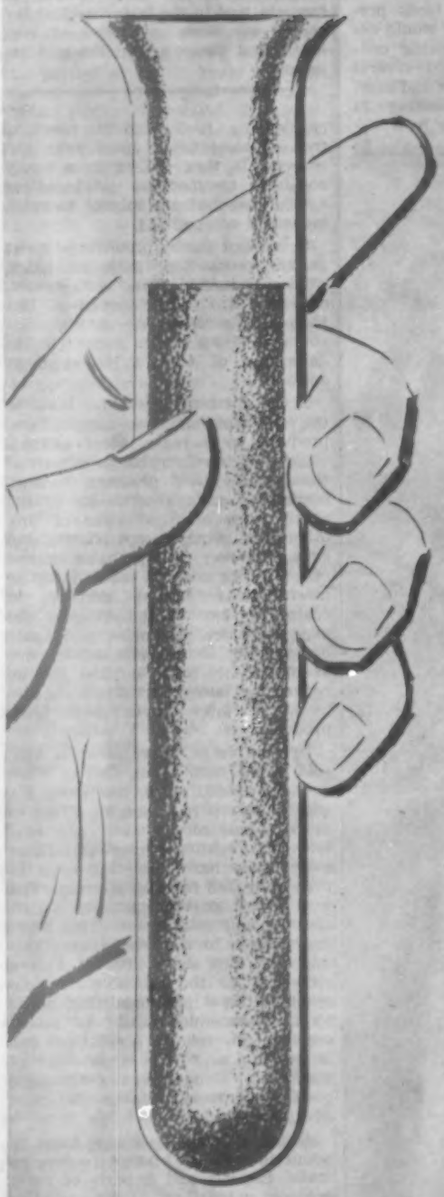

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# Five-Year Outlook for Meat Animals

## A Good Sign for the Feed Business: Livestock to Contribute Increasing Proportion of Farm Income

**EDITOR'S NOTE: There has been a good deal of comment recently on the livestock and feed outlook for 1956 and to some extent for 1957. However, anyone in the feed business who is planning ahead will be interested in the outlook for meat animals for even a longer period ahead. Experts in the U.S. Department of Agriculture have prepared a report which describes the outlook for cattle, hogs and sheep for a five-year period centering in 1960, and a summary of that report appears here. The report points out that meat animals in future years will hold a very strong and probably an increasing position in U.S. agriculture, which is a good prospect for the feed business. The report tells why meat animals will likely contribute a rising proportion of the total income of farmers, and in the latter part of the report are some estimates of hog, cattle and sheep production and returns.**

Meat animals in future years will hold a very strong and probably an increasing position in the agriculture of the U.S. Projections for the period centering in 1960 indicate that their production will be large, and their prices, while not unusually high, will compare favorably with prices of other farm products. Meat animals will likely contribute a rising proportion of the total income to farmers.

These prospects are built on the following:

**1. High Employment and Incomes.** The expectation is for a high level of industrial activity and employment, and for rising incomes of consumers. Recent years have demonstrated the capacity of the U.S. economy for productive abundance and for growth. Total output of all goods and services could increase a fifth in the next five years. Personal incomes per person would thereby be enlarged by about 11%.

In these estimates, some minor ups and downs in business activity are allowed for. It is assumed that a major recession will be avoided. If one should occur, the projections presented here would no longer be valid.

**2. Fairly Large Expenditures for Meat.** As incomes of consumers increase, the demand for meat also is expected to rise. However, it would not go up as fast as incomes. The per cent of incomes spent for meat will probably be slightly smaller in 1958-62 than in the last year or two. This slight reduction would continue a slow long-run downtrend.

Demand for beef doubtless will prove stronger than that for pork. Over 40 years or more, consumer demand has swung away from pork toward beef. Trends in hog production and marketing, such as the adoption of meat-type hogs, may retard this trend. Nevertheless, the high consumer incomes postulated for 1960 do not denote as much demand for pork as for beef.

**3. Meat Animals to Be in Favorable Position Relative to Other Farm Products.** As one of the foods preferred by consumers, meat would derive more benefit from rising consumer incomes than would several other foods. Moreover, meat and meat animals might hold an advantage in several other ways. Since it is exclusively a food product, meat is free of competition from industrial sources. It thus differs from many non-food commodities produced in agriculture that are subject to much industrial competition.

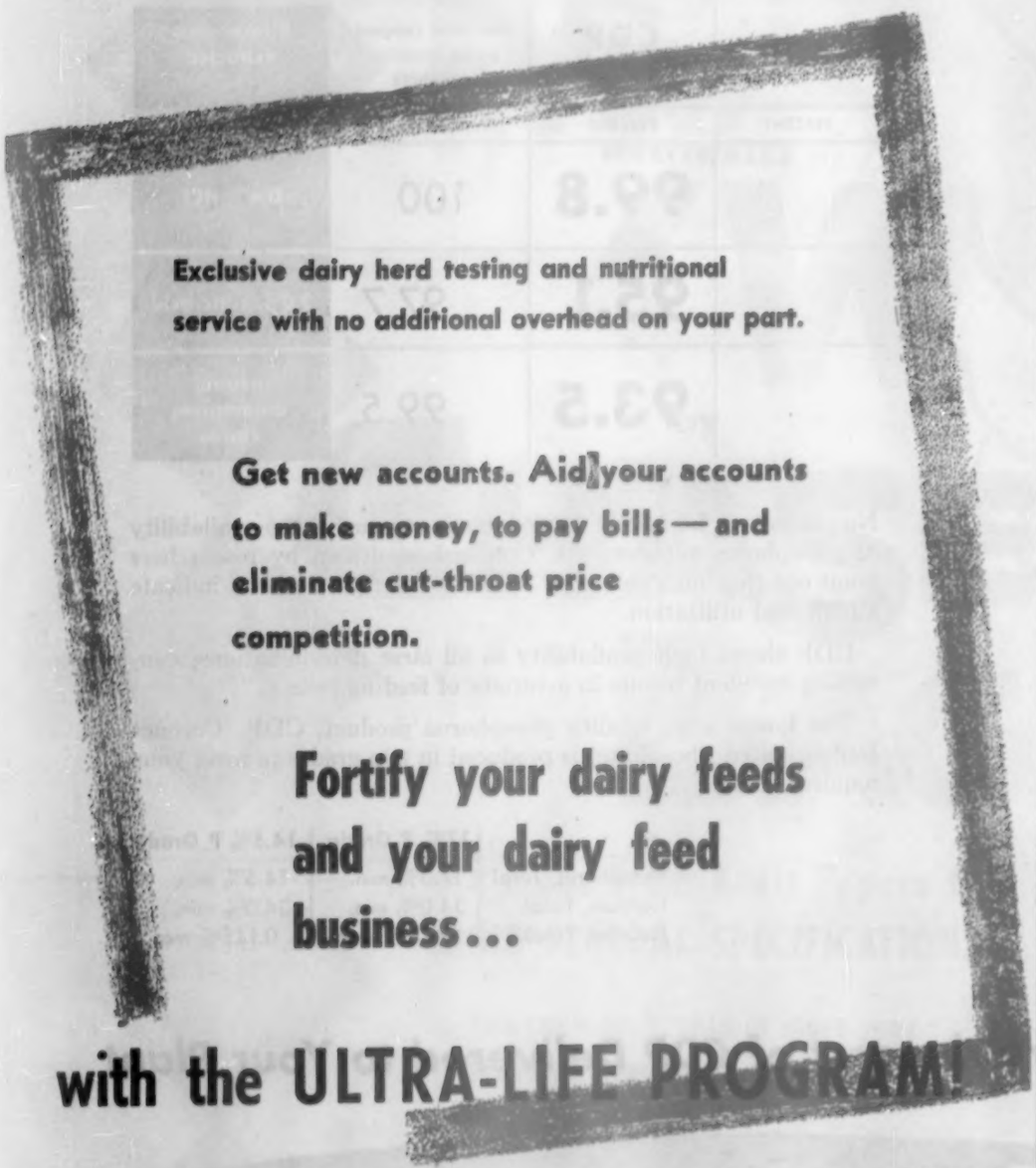
Several of the by-products of meat animal production, such as hides, wool and inedible fats and greases, do enter into such competition. But these, while definitely of high importance, are a rather small fraction dollarwise of total value of meat animals.

A current tendency is for costs of the marketing and processing of farm products to increase. Meat animals could be less vulnerable to this trend than most other products because marketing costs absorb less of the retail price of meat than of any other food group except poultry and eggs. However, the probable course of marketing costs in meats is by no means clear. Recent increases in costs for some foods represent the expense of new processing, packaging or servicing. Evidence is inconclusive as to whether these services add to, reduce, or leave unchanged the demand and price for the basic farm product.

By and large, most meat is still sold in the same form, that of fresh cuts at retail, as it has been for generations. (Pre-packaging is not so much a new service as it is a new form of a customary service.) However, there have been increases in processing and canning of meats, and a small but growing quantity is currently being sold frozen. This processing adds to the over-all marketing cost. But since little is known either as to the probable developments in meat merchandising, or as to the economic impact of added services, few reliable conclusions can be reached as to the significance of marketing trends to the economic position of meat animals the next five years.

A similar inconclusiveness must be admitted with respect to foreign trade. Exports and imports of meat are now so small that the commodity is affected very little by increases in foreign demand for U.S. farm products, or by decreases such as have occurred the last few years. But exports of animal fats—lard, tallow and grease—are large. They will be subject to any change in strength of foreign demand in years ahead.

In the early twenties, meat animals provided 24% of all cash receipts from farming. They have more recently accounted for almost 30%. Since the prospective future position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of meat animals is relatively favorable, the percentage may well continue upward.

**4. Large Supplies of Feed.** Supplies of feed will almost assuredly remain large for a number of years. Technological progress in culture of feed crops promises continued increases in yield per acre. How many acres will be devoted to field crops will depend in part on farm policy. Nevertheless, it seems inevitable that limited foreign outlets for U.S. export crops (principally cotton, wheat and tobacco) will create a tendency toward sizable acreages of feed crops. Moreover, the large stocks of feed grains, and of wheat also, now on hand will be available to offset any temporary deficit in "free" supplies of feed.

Specifications of the present price support program would indicate somewhat lower price supports on corn over the next few years than in the last two. Beginning with 1956 the parity price of corn will be stepped down 5% a year until modernized parity is reached. The total reduction will probably be more than 10%. Support as percentage of parity can be as high as 90% or as low as a minimum that varies with each season's prospective supplies but is never less than 75% (to complying farms in the commercial area). Based on the lower parity due to go into force and on present indications of supply, the support price in 1956-57 could be around 15¢ less than the 1955 support of $1.58 bu.

Support on other feed grains, in years ahead, which is entirely discretionary, would likely be no higher than a normal relation to the price of corn.

Present legislation for support could be revised. Nevertheless, all the factors, including the large carryover and declining parity base, would seem to militate against very high prices.

The longer the distance viewed, the less bearing do feed grain policy considerations have on the outlook for meat animals. For over a longer time, policies as to acreage controls, price support and management of storage stocks can be adjusted to circumstances that evolve —particularly those of demand for livestock products, which in turn determine the requirements for feed.

**5. Technological Advances in Livestock Production.** Recent developments in efficiency of feeding livestock—an area long neglected in research—including antibiotics and stilbestrol, are harbingers of further advances that may well occur in the future. Continued research effort and achievement would give added support to expansion of the livestock industry in future years.

**LIVESTOCK PRODUCTION PROJECTIONS.** Prospective supplies of feed for 1958-62 are estimated from an expected yield of 40 bu. corn per acre and comparable yields of other feed grains. If the acreage of feed grains is about the same as in 1954 and 1955, annual production would average 130 million tons. If acreage of the feed grains other than corn reverts to the pre-allotment level of 1952 and 1953, annual production would be 122 million tons. As a reasonable compromise, a figure somewhat nearer 130 than 122 million has been assumed for the estimates that follow.

Such a supply of feed would support, at average feed consumption rates, between 180 and 185 million grain-consuming animal units. This would be only 1 to 4% more than those for 1955-56. However, it would be 5 to 8% above the 1952-54 average. Production of livestock products would be up more, as production rates per animal unit are increasing.

**Hogs.** Production of hogs is expected to expand over the next few years following a probable cutback in late 1956 and 1957. It may generally keep up with the rate of population growth or exceed it slightly.


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U.S. agriculture is well suited to production of hogs. Demand for pork may remain strong enough to sustain such a gradual expansion.

Estimates for 1958-62 are for an annual pig crop of around 105 to 108 million. Annual slaughter would be 90 to 93 million, and the supply of pork for consumption would be approximately 68 lb., or almost exactly the same as the 1945-54 average. Prices of hogs would likely be higher than the low average prices in the fall of 1955 but perhaps no higher than prices in the same period of 1954. The hog-corn price ratio would at least be equal to its longtime average.

**Cattle.** Production of cattle in 1958-62 can be estimated only with regard for the probable course of the cattle cycle in the intervening years. Slaughter of female stock apparently has already proceeded to a point that will initiate declining annual production and reduced cattle numbers the next few years. If prospects for only a rather small decrease prove true, numbers could be again on the increase during much of the 1958-62 period. By the end of that span they might have surpassed the 1955 number of 95 million.

As the expansion phase is one of withholding stock and of rather small slaughter, the supply of beef could not quickly regain the high 1955 quantity of 13.6 billion pounds. It might reach or exceed it by the end of the 1958-62 period. For the larger consuming population, it would be relatively smaller than in 1955. The 1958-62 average consumption is estimated at 74 lb., 7 lb. less than the 81 lb. in 1955. A 74-lb. rate, however, is higher than in any recorded year prior to 1953. Beef supplies will continue comparatively large in years ahead, even if not fully as large as in 1955.

Aided by strong consumer demand for beef, prices of cattle will likely average appreciably higher in 1958-62 than in the last three years. A prospective level as estimated from the foregoing conditions would remain well below the prices of the boom years 1950-52. It might be near the average of the immediate postwar years 1946-49.

**Sheep and Lambs.** Numbers of sheep and lambs on farms and ranches are expected to turn upward before the beginning of the 1958-62 period. Decreases in numbers on western ranges will slow down, while increases in farmland of West and East will likely continue. At most, however, increases will be moderate. Sheep will remain an industry of secondary importance in American agriculture.

For the larger population, the lamb consumption rate would not deviate far from the 4 to 4½ lb. of recent years.

Prices of sheep and lambs would average higher than in the last few years. But they too would not turn to their one time highs.

## Werthan Bag Executive T. H. Gillespie Dies

NASHVILLE, TENN.—T. H. Gillespie, vice president and general manager of the Werthan Bag Corp., died here Nov. 27 as a result of a heart condition. Mr. Gillespie had been active in the company until last week and had entered the hospital only a day before his death.

Born in Mobile, Ala., Mr. Gillespie moved to St. Louis at an early age and became associated with the Werthan corporation in 1918. When the firm established its headquarters in Nashville in 1922 he moved to the general offices and served as an executive officer of Werthan for over 25 years. He was a member of the company's board of directors.

Survivors include his widow, Mrs. Jeanette Gillespie, a daughter, Mrs. Mary Serena Vaughan, Pasadena, Cal., a son, James D. Gillespie, Nashville, a brother and one grandson.

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# Present Status of Unidentified Growth Factors in Poultry Nutrition

By A. B. Morrison
Cornell University

**EDITOR'S NOTE: The complexity of research being done to learn more about unidentified growth factors in relationship to poultry nutrition is indicated in the accompanying article which was presented as a talk at the recent Cornell Nutrition Conference for Feed Manufacturers by A. B. Morrison. A member of the poultry husbandry department at the university, Mr. Morrison has done recent research on this important subject.**

v v

Since the poultry industry plays an important role in our agricultural economy, it is of considerable practical as well as fundamental importance to determine the qualitative and quantitative nutritional requirements of the various types of poultry. Accordingly, our laboratory has laid considerable emphasis on the study of unidentified factors required by poultry.

Such studies are important for several reasons. It is desirable to determine the direct effects which these factors may have on growth, egg production, reproduction and efficiency of feed utilization. Further, a knowledge of possible interrelationships between these factors and known nutritional essentials is necessary for adequate studies on quantitative nutritional requirements.

Since the isolation of vitamin $B_{12}$ in 1948, many investigators have noted that a variety of natural materials are capable of stimulating growth in poultry when added to diets adequate in their content of all known essential nutrients. It seems certain that fish solubles contain at least one unidentified growth factor required by the chick and poult. Heuser and Norris (1), Atkinson and Couch (2), McGinnis et al (3), Fuller et al (4), Wiese et al (5) and others have presented evidence for the existence of such a factor. Growth response over and above that attributable to vitamin $B_{12}$ has been obtained from the addition of fish meal to chick diets Carlson et al (6), Heuser and Norris (1), Slinger et al (7), and others.

Studies reported by Synold et al (8) and confirmed by several other groups of workers (Novak et al (9), Novak and Hauge (10, 11), Couch et al (12), Scott (13), and others) have shown that distillers dried solubles contains unidentified growth factor activity for chicks and poults.

Scott (14) extended earlier work with guinea pigs and rats to poultry, and found that forage juice is a source of an unidentified factor(s). His results have been confirmed by several other investigators (Slinger et al (15), Kohler and Graham (16), Hill et al (17), and others).

In 1948, Hill (18) concluded that dried whey contains an unknown growth factor(s). Similar results have been obtained by Reed et al (19), Fuller et al (14), and others.

### Additional Factors

In addition to the above naturally occurring feed ingredients, unidentified growth factors for poultry have been reported in dried brewers yeast (Carlson et al (6) and others), fermentation residues (Edwards et al (20), Shaeffer et al (21), and others), liver fractions (Combs et al (22), Menge and Combs (23), and others), egg yolk (Denton et al (24)), peanut meal (Young et al (25)), poultry house litter (Jacobs et al 26)), and feather meal (Lillie et al (27)).

Although unidentified growth factors have been reported in a large number of different materials, much additional research is required to clearly differentiate the various factors, isolate and identify them, and establish their importance in practical nutrition.

Several recent reports from this laboratory (Norris (28, 29), Scott et al (30)) indicated the existence of at least three distinct unidentified chick growth factors. One of these factors was found to exist in fish solubles, another in distillers dried solubles, and the third in forage juice.

It is the purpose of this report to show that the maximum growth response obtained in chicks fed a mixture of unidentified growth factor supplements, supplying the three above mentioned factors, is due both to an organic factor or factors and an inorganic factor(s) in the mixture.

### Basal Diets Used

The purified basal diet used in most of the studies included in this report is composed of the following ingredients: dextrose (Cerelose), 61.30 gm.; isolated soybean protein (Drackett Assay Protein C-1), 25.47 gm.; hydrogenated fat (Hydora), 3 gm.; ground cellophane, 3 gm.; DL-methionine, 0.7 gm.; glycine, 0.3 gm.; $CaHPO_4 \cdot 2H_2O$, 2.720 gm.; $CaCO_3$, 1.492 gm.; $KH_2PO_4$, 0.867 gm.; NaCl, 0.6 gm.; $MgSO_4$, 0.25 gm.; $FeSO_4 \cdot 7H_2O$, 0.0333 gm.; $MnSO_4 \cdot H_2O$, 0.0333 gm.; KI, 0.26 mg. $CuSO_4 \cdot 5H_2O$, 1.67 mg.; $ZnCl_2$, 1.0 mg.; $CoCl_2 \cdot 6H_2O$, 0.17 mg.; $Na_2MoO_4 \cdot 2H_2O$, 0.83 mg.; choline

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chloride, 0.15 gm.; inositol, 25.0 mg.; niacin, 5.0 mg.; calcium pantothenate, 2.0 mg.; alpha-tocopheryl acetate, 2.0 mg.; thiamine hydrochloride, 1.0 mg.; riboflavin, 1.0 mg.; pyridoxine HCl, 0.45 mg.; folic acid, 0.40 mg.; menadione, 0.05 mg.; biotin, 0.02 mg.; vitamin $B_{12}$, 2.0 mcg.; vitamin A, 500 I.U.; vitamin $D_3$, 37.5 I.C.U. per 100 gm.

The isolated soybean protein used was purified by repeated washing at its isoelectric point of pH 4.6. In a few of our studies we have used purified casein plus the necessary essential amino acids as the protein source, or a mixture of purified casein and purified isolated soybean protein. The casein was purified by repeatedly washing it at pH 2.5 in a salt-acid solution, followed by washing at its isoelectric point of pH 4.7, after decantation of the supernatant liquid.

In our investigations on unidentified growth factors we have found purified proteins to be markedly superior to unpurified protein sources. Norris (28) has previously drawn attention to the advantage, in unidentified factor work, of using basal diets composed of purified ingredients.

**Contains Known Nutrients**

The basal diet listed above contained all nutrients known to be required by the chick in amounts equal to or in excess of the values reported as necessary by the National Research Council (31). In studies on unidentified chick growth factors, it is essential that the basal diet employed be adequate in its content of known essential nutrients. Accordingly, we have conducted several studies to demonstrate the nutritional adequacy of the basal diet.

Increased quantities in the basal diet of known essential vitamins including inositol, essential amino acids, or linoleic acid had no influence on growth. Increasing the magnesium level of the basal diet by the addition of reagent grade magnesium sulfate did not result in any increase in growth. In several experiments, we have found that increased sodium or potassium levels, either alone or in combination, did not influence growth. Alteration of the calcium and phosphorus content of the basal diet by the addition of 1% dicalcium phosphate did not improve growth. Increments of chlorine up to 0.38% added chlorine did not influence growth.

Increased quantities of the known essential trace minerals failed to increase chick growth. In a further attempt to prove the adequacy of the basal diet in known essential minerals, 25% more of the mineral mixture was added to the basal diet. This, too, failed to result in any significant increase in growth.

Although we have been unable to improve growth on the basal diet by altering its content of known essential nutrients, we have found that supplementing the basal diet with a mixture of unidentified growth factor sources has increased the gain of chicks during the first four weeks of life by an average of nearly 35% in repeated experiments. Chicks fed the basal diet adequately supplemented with unidentified growth factor sources have grown as rapidly as those fed commercial chick starters, and frequently better. The mixture of unidentified growth factor supplements used in most of the studies consisted of 6% of a composite sample of corn distillers dried solubles, 3% fish solubles, 3% grass juice, 3% dried whey product and 3% penicillin mycelium meal.

**Differentiation Between Factors**

In further experiments designed to test the nutritional adequacy of the


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purified basal diet, Morrison et al (32, 33) ashed the mixture of unidentified growth factor supplements and the composite sample of corn distillers dried solubles referred to above, and fed the ashes to chicks. The ashes were prepared in a muffle furnace at 525° C. for four hours, cooled and neutralized to pH 7 with glacial acetic acid. In a large number of repeated experiments, it was found that the neutralized ashes of both the mixture of unidentified growth factor supplements and of the corn distillers dried solubles promoted a growth response approximately two thirds as great as that obtained with the intact materials. The ash of the mixture of unidentified growth factor supplements promoted a greater growth response than did the ash of 6% of corn distillers dried solubles.

Accordingly, graded levels of both intact and ashed corn distillers dried solubles were fed to chicks. The results obtained indicated that the ash of 2% of corn distillers dried solubles was as effective in promoting chick growth as was the ash of 8% of corn distillers dried solubles. This, coupled with the greater growth response obtained from the ash of the mixture of five growth factor sources as compared with the ash of corn distillers dried solubles, suggests the existence of two unidentified inorganic essentials in the ash of the mixture of five unidentified growth factor supplements.

The identity of the unidentified factor supplement supplying the second inorganic essential in addition to the one present in distillers dried solubles is not certain. In independent studies, workers at Texas A&M College (34, 35) have obtained significant growth responses from the ash of corn distillers dried solubles and dried whey. Recently, Tamimie (36) reported an unidentified inorganic essential in the ash of fish meal. In one experiment at Cornell, the ash of fish solubles was found to be growth promoting.

**Use Deficient Chickens**

In the majority of our investigations we have used chicks from hens fed diets designed to produce chicks deficient in unidentified chick growth factors. Earlier studies by Waibel and associates (37) showed the advantage, in work on unidentified chick growth factors, of using chicks from hens depleted of their supplies of unidentified growth factors. Highly depleted basal chicks have exhibited an enlarged hock disorder, characterized by enlargement and elongation of the hock joint.

We have observed, in repeated experiments, that the mixture of five unidentified growth factor supplements, or its ash, was markedly effective in reducing the incidence of the disorder. The composite sample of corn distillers dried solubles, or its ash, was less effective in reducing the incidence of enlarged hocks.

The available data indicate that at least two factors, one at least of which is inorganic in nature, are involved in prevention of the enlarged hocks.

Attempts have been made to determine the mechanism of the growth-promoting activity of the ash. Carcass analysis data failed to reveal additional water retention in the ash-fed chicks.

In attempts to determine the biologically active component of the ash, a number of other substances were tested in addition to those known to be nutritional essentials for the chick. At the levels used, addition of acetate, aluminum, arsenic, barium, bismuth, boron, bromine, cadmium, cesium, chromium, cobalt, fluorine, lead, lithium, mercury, nickel, rubidium, selenium, silicon, silver, strontium, sulfur, tin, titanium, tungsten or vanadium did not affect growth. Acetate was tested since the ash was neutralized with glacial acetic acid, and because Almquist and Mecchi (38) had previously reported growth stimulation in chicks from sodium acetate.

Many of the substances listed


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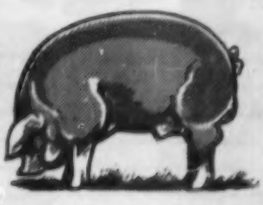

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above have also been tested for biological activity by the Texas group (34, 35), with similar results to those which we have obtained. The Texas workers (Reed et al (35)), however, reported equivalent growth from a simulated ash formulated on the basis of spectrographic analysis data, to that obtained from the ash of corn distillers dried solubles. In our hands, synthetic mineral mixtures have not as yet provided conclusive results.

### Action of Ash Indirect

A consideration of all of the available evidence has led us to suspect that, at least in part, the action of the ash in promoting growth may be indirect in nature. One of our associates, Richard Dam, is currently engaged in assessing the possible effects of the ash on the intestinal microflora. Within the last couple of months we have observed that the response to the ash exhibited by our depleted chicks has diminished, although chicks fed ash have still grown better than those fed the basal diet.

This decrease in response to the ash may be related to the extreme degree of depletion of the dams, since tentative evidence indicates that chicks from a commercial hatchery, which did not respond as well to the ash last fall as did our depleted chicks, now respond somewhat better.

Other possible causes include unrecognized changes in the mineral content of components of the basal diet, unknown seasonal effects, or alteration of the characteristics of the intestinal microflora. That the latter may be important factors in the response to unidentified growth factors is indicated by studies reported by Barnett and Bird (39). They found that the addition to the basal diet of 1% of feces from older birds resulted in a growth response to fish solubles; when the diet was uncontaminated, no response to fish solubles was obtained.

The inability of investigators, up to the present, to determine the growth-promoting component of the ash of certain unidentified growth factor sources illustrates the complexity of the research on the unidentified growth factors. Progress is likely to continue to be slow, and it may be some time before the various unidentified chick growth factors are differentiated, isolated, and, in the case of the organic factor(s), synthesized. Natural materials may perhaps continue to be the most economical way to supply the inorganic factor(s), even after isolation of the factor(s) has been achieved.

For the time being, it appears necessary to continue to include crude sources of both the organic and inorganic unidentified growth factors in practical poultry rations. These are in general: animal products such as fish meal, meat scrap, liver meal and fish solubles; dehydrated plant products such as forage meals and grass juice; milk by-products such as dried whey, dried buttermilk and dried skim milk, and fermentation by-products such as distillers dried solubles, dried brewers yeast and antibiotic residues.

### Summary

It has been found that a portion of the growth response obtained when certain unidentified chick growth factor supplements are fed to chicks is due to their content of an inorganic constituent or constituents, since an appreciable growth response is obtained from the ashed materials.

Available evidence indicates that the growth response obtained from the ash cannot be due to dietary deficiency of nutrients known to be required by the chick. Added levels of all trace minerals known to be required by the chick, alteration of the calcium and phosphorus content of the diet, increased quantities of sodium, potassium or magnesium, or 25% additional mineral mixture, had no influence on growth.

Although a considerable growth response was obtained from the neutralized ash of a mixture of unidentified growth factor supplements, or from the neutralized ash of a composite sample of corn distillers dried solubles, our data indicate that the total unidentified growth factor content of both the mixture of five unidentified growth factor supplements and the corn distillers dried solubles cannot be entirely explained on the basis of their inorganic constituents.

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This entry finished at 10 weeks with a feed efficiency of 2.41 and had a combined weight of 3.93 lb. The males weighed 4.47 lb. and the females 3.36 lb.

Two entries of White Rocks were practically tied for the second best weights. One largest of these two entries had a combined weight of 3.8 lb. with the males weighing 4.29 and the females of 3.03 lb. The next heaviest entry was only separated by 0.02 lb. in the combined weights.

The first place feed efficiency was accomplished by an entry of Dominant White-White Plymouth Rocks. This entry had a feed conversion of 2.27 and had a combined weight of 3.28 lb. with males weighing 3.67 lb.

Test officials do not make the names of the individual pen owners public. Instead, a symbol is used to identify each entry. The participating breeders are given all the available information. However, the next year's test will have decoded entries in the commercial group classification. The experimental entries will remain coded.

The test ended with an average combined weight of 3.45 lb. for all entries. The males averaged 3.87 and the females averaged 3.02 lb. This is practically the same weight averages as the second trial showed.

However, a comparison for feed conversion for the second and third trials presents a different picture. The third test just completed had an average feed conversion of 2.43 while the second test averaged 2.61. This is an excellent example of the better feed utilization that occurs during the warmer months in contrast to raising broilers during the winter.

The birds are also scored on dressed grades by a commercial grader as they come off the dressing line. The top entry in weights also scored the highest for dressed grades.

Mortality for the test averaged 2.33% with the pen of Dominant White Cornish-White Ace losing no birds during the 10-week growing period.

## W. J. McGowan in New Allis-Chalmers Post

MILWAUKEE, WIS. — William J. McGowan has been named to the newly created post of director of industrial and community relations division, Allis-Chalmers Manufacturing Co., it was announced this week by W. A. Yost, Jr., vice president, staff operations.

In his new position, Mr. McGowan will direct industrial relations activities among all Allis-Chalmers employees and coordinate community relations programs in all cities in which Allis-Chalmers has plants.

W. C. Van Cleaf will continue his activities as manager of industrial relations for the West Allis Works of the company.

Mr. McGowan has been an attorney in the Allis-Chalmers legal division since May, 1942. After his graduation from the University of Wisconsin in 1932, he was for 10 years associated with a Milwaukee law firm.

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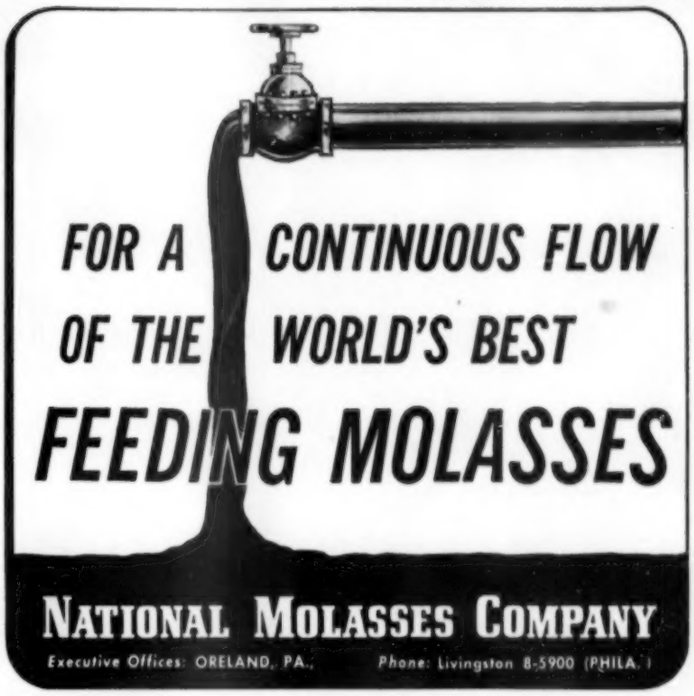
There will also be space for evaluation of the effects of various chemicals on the germination of many seed varieties. Experiments will be conducted by Dr. David L. Lindgren and Dr. Glenn E. Carman, entomologists at the University.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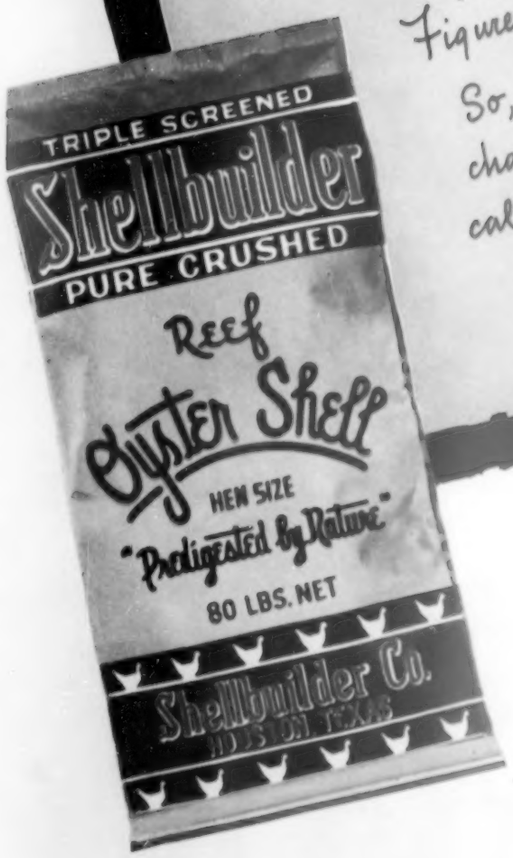


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# CAPITAL COMMENT

## By John Cipperly

*EDITOR'S NOTE: This article is the second in an attempt by Mr. Cipperly to pin-point the farm problem and collateral social-economic aspects that cannot be solved by political expediency alone. The first article, on "The Revolution in U.S. Agriculture," appeared in the Dec. 3 issue of Feedstuffs.*

WASHINGTON—The crisis on the farm social-economic front cannot be divorced from the other internal problems—such as the problem in the coal mining industry and the cotton problem, which is reaching the crisis stage. They are all part and parcel of a new phase of the industrial revolution which is making itself felt within the 20th century.

On the farm front, Ezra Taft Benson, secretary of agriculture, is wrestling with the paralyzing surpluses of wheat, cotton and corn, while the coal industry is presently displaced by use of gas, oil and hydroelectric power and is further handicapped by heavy freight costs required to move the commodity.

Cotton—rapidly being priced out of world and domestic markets through the artificiality of a high U.S. price maintained through the support program—now meets face to face the increasing competition of synthetic fabrics. If the producers of these synthetic fibers were to lower the price level of those products, cotton indeed would vanish from the world and domestic markets except for some uses for which cotton is superior. But at the price levels reflected by 90% of parity support, the era of "king cotton" appears to have ended.

To leave the solution of the farm problem to the politicians is reminiscent of the time when disease epidemics were treated through seclusion in the municipal or county pest house where the remedy was broadly a purgative, the poultice and the blood-letting leech. Generally the patient died.

Thus, it is feared, the farm communities may go through the same unwise diagnosis and treatment, and many farmers may meet a serious economic fate unnecessarily, not as farmers but as individuals. A similar problem may be found in the coal industry, which is currently suffering from economic death throbs.

The community approach to the handling and treatment of virulent contagious disease fortunately evaded the politicians' touch in the late 90's and early 1900's, and medical science was permitted to develop unhindered by the politicians since contagious disease did not involve a highly developed voting potential such as is now found in the farm community and the coal industry. However, the medical profession was hampered by opponents of vaccination and other scientific methods—an opposition somewhat parallel in these days to the food faddist who repudiates the benefits and values of such techniques as enrichment of wheat flour.

### In Political Sphere

Unhappily the social-economic scientist too frequently finds his sphere of action overlapping or closely parallel to that of the politician, who, through his public eminence, lays claim to the center of the stage. And, because of the cohesive condition of his constituents—the farmer and the coal miner—the politician can push claims of cure-alls effectively within the socially and economically afflicted communities.

Thus we see, virtually on the eve of the assembly of Congress, a renewal of political demands for attention to remedies which have not worked in the past and probably will only defer at best the recuperation of these group patients—and, indeed, may prematurely cause their economic death.

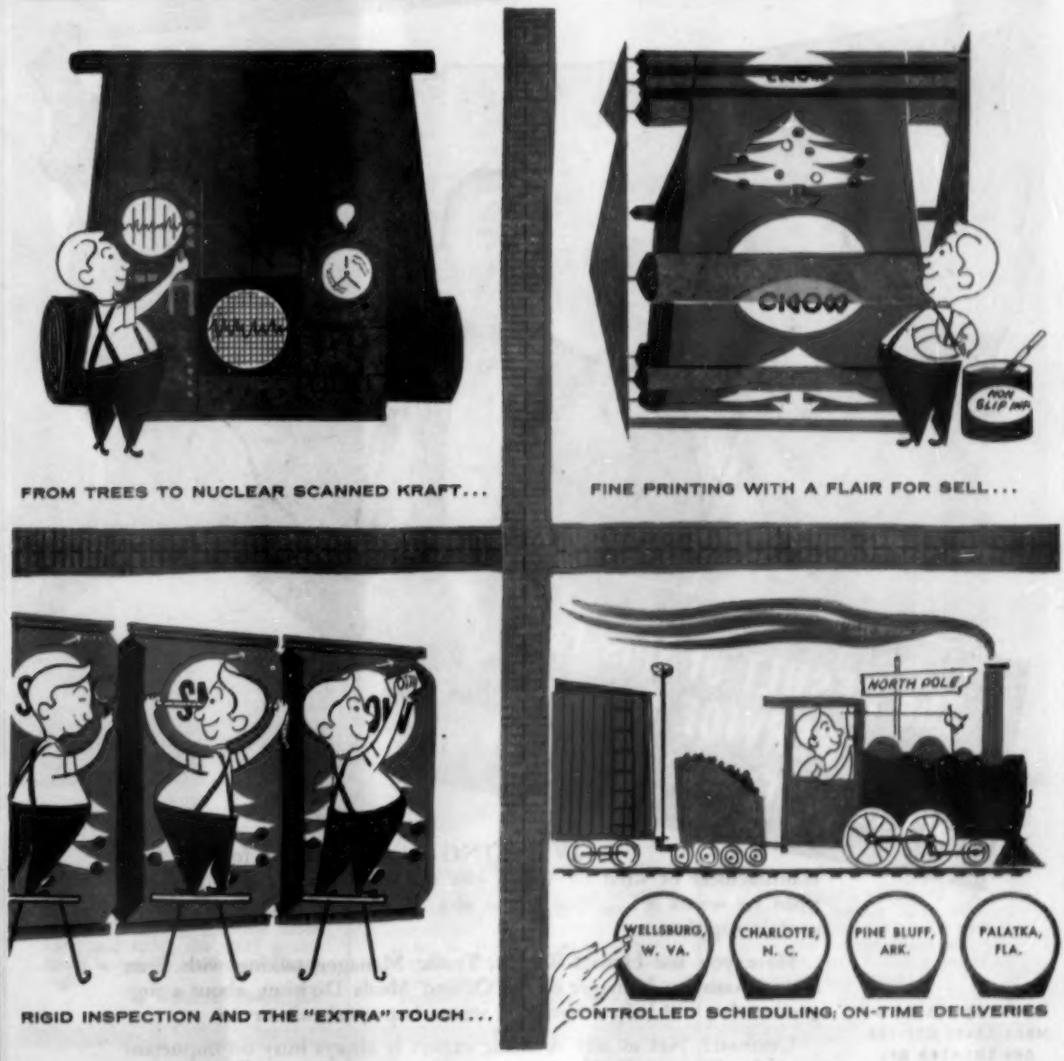
In the terms of the medical scientist, the farm community is now suffering from an exquisitely tender infection currently known as the cost-price squeeze, a condition which has nothing whatever to do with any level of price support. High grain prices which prevailed during and after the war and during the Korean episode were the result of acute world demand for food.

When considering the hard lot of the farm community, today, one may wryly note that during days of price control in World War II, the federal government had to provide a per bushel bonus to farmers to deliver grain to meet demands as the farmers declined to surrender their crops at what they considered to be inequitable ceiling prices.

This price squeeze is a phenomenon resulting from too much stimulant for the patient and a check rein on the advance of science which has been steadily making itself felt in farm management. This advance is reflected in the mechanization of farming operation, the elimination of farm work animals, the introduction of hybrid seed corn, the wider acceptance of farm chemicals and pesticidal products, artificial insemination of livestock and poultry, better feeding, breeding, crop rotation and other scientific methods developed and urged by the land grant colleges and the processing industries which saw directly their importance to the big source of raw materials, the farm.

### Government Interference

What has been happening results from widespread government interference in the normal development of modern scientific techniques which probably would have effected a solu-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tion to the farm problem before it slowly dragged to its crisis stage of today.

The major incident of government interference was political insistence on the retention of high level price supports which were assumed to be the cause of high prices for many of the farm products.

In advocating a maintenance of the high levels of support, the farm politicians said in effect: "Well, in any event, we can always impose acreage controls to halt over-production."

And here is about just where they stand today. The surpluses were permitted to grow when the former secretary of agriculture, Charles F. Brannan, refused to impose acreage allotments in a critical election year. The same political farm leader is now allegedly guiding the Benson opposition in assisting in a draft of a farm program for the Democratic party.

Another of these incidents was the approval of the International Wheat Agreement, altruistically designed to stabilize world wheat prices and hold down uneconomical production of the bread grain in nations which, it was feared, would strive for self-sufficiency.

That goal, however, was never reached, as may be noted from official estimates of world wheat production. The same old competitors for world markets have appeared on the scene, along with a few newcomers. The same condition exists in cotton, with the prospect that within not too many months U.S. cotton will be excluded from world markets unless we provide a subsidy for that crop well below the artificial levels of support now maintained. And even then it is doubted that U.S. cotton can ever re-gain its place in the world textile sun, barring some strange and unexpected development.

Another bad commentary on our national myopic vision has been the Marshall Plan, which has gone through several legislative revisions but is still with us. In its early days, the Economic Cooperation Administration, as it was then known, was the big stimulant for wheat, feed grain and cotton exports, since virtually all of those exports were financed through Marshall Plan grants. Unconsciously as the nation and the world watched the phenomenal recovery of Western Europe, it was not seen that the blush of financial welfare of the U.S. farms was a super-induced fever resulting from the gifts of wheat, cotton and corn paid for by U.S. taxpayers, among whom were our farmers.

### Production Unchecked

As the ECA and its successor agencies tapered off their economic aid, high production went on unchecked with the financial backstop of 90% of parity support.

And here we are today, with a Secretary of Agriculture wrestling with the surpluses, beset on every side by frightened politicans who refuse to admit their previous wrongdoings and see a return to yesterday's remedies as the good outcome.

After a survey of farm problems as shown by testimony from the farm areas themselves, the chairman of the Senate Agriculture committee, Allen J. Ellender (D., La.) is now asking the large farm groups to consolidate their ideas on a farm problem remedy. One of those group leaders, James Patton of the National Farmers Union, answers in effect, "It can't be thus done."

In connection with the major farm groups, it has never been too clear just whom they represented. The farm group leaders are for the most part heads of organizations named by professional workers — in brief, Hessians, working this year in this camp and next year in the other. The extent of overlap of farm group memberships has never been defined, but it may be suspected that many farmers are attracted to two or more farm organizations through premium devices such as attractive insurance policies or other features which have nothing to do with the product or the service offered.

### Farm Revolution

To return to the thesis set forth in Feedstuffs a week ago—we are entering into the crisis period of a farm revolution closely parallel to that of the industrial revolution which hit western Europe with the harnessing of steam power in the urban factory.

Some comfort may be found in some clear-cut political sanity coming from the Democratic U.S. senator from New Mexico, Clinton P. Anderson, who has strenuously refused to be drawn into the whirlpool of farm politics.

On the Republican side, there is, as ever, the Vermont farm leader who has persistently fought for social-economic sanity in the farm program, Sen. George D. Aiken. These two gentlemen reflect a bi-partisan approach to the farm crisis.

Another point of comfort for the alarmed observers may be the newly expressed attitude of the junior Democratic senator from Massachusetts, John F. Kennedy, who recently repudiated the rigid high price support program and insisted that the farmer must not be torn into economic ribbons as partisan politicans wrangle over the disposal of the body.

Within the Senate there is another Democratic farm leader, Spessard Holland of Florida, who rejects the partisan approach and leans to the Aiken-Anderson team.

### Deserves Best Attention

From this focal point of defense, it must be hoped that the farm program can be thrown into focus and perspective and that it will be considered as a huge social-economic problem deserving of the best attention of the top leaders of the nation —including processing industrialists and such industrial leaders as heads

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The current "exquisite tenderness" of the farm community is the price squeeze, which is nothing more than its failure to keep up production cost-wise with the big mass production units.

It is not too early to start thinking about this farm problem. It is real. It is here. Secretary Benson is fighting a battle on a negative front. His is another Maginot line—a position in which he is frozen because of the presence of huge undisposable surpluses of three major commodities which make up a substantial part of our farm income.

To sacrifice Secretary Benson to the political wolves will solve nothing. It will merely defer until some later day the reckoning. The present administration has not been purposely depressing farm income as claimed by some aspirants for the Democratic presidential nomination. The farm income slide is the inheritance from previous administrations which invested the farm competence in some highly questionable securities—as for example, the high price support preferred stock, which has never met its dividend requirements.

It is little wonder that a farmer may feel discomfort as he sees urban wages rise, dividends increase and stock prices zoom while he is caught in the cost-price squeeze—a squeeze which is the hand-maiden of a policy which the politicians thought would outlast the problem.

The farm politician has led the farm community down a path of despair from which there is no returning except through some drastic remedy. Perhaps the situation would have happened without the political leadership. The farm faces industrialization. Farm costs must be brought into line with costs of industrial factories.

The sands in the hour glass are running out, but all is not lost. In fact, nothing is yet lost. There may be an opportunity for industrial leaders to join hands with political leaders to find a path through this farm chaos—the coal chaos as well. It is a poor remedy to attempt to solve the problem of unemployed coal miners through public food handouts to sustain them at a bare subsistence level.

Let's not toss aside our politicians abruptly. Strange as it may seem, they frequently exhibit good common sense. They are needed in making the economic-social broth to nourish our economic patients while the specialist economic doctors come through with an accurate diagnosis and treatment of the disease afflicting a very substantial part of our nation's life and well-being.

### GRAND OPENING

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## Way Found to Measure Calf's Thyroid Output

EAST LANSING, MICH. — Some basic research by a Michigan State University dairy scientist may have a big impact on the dairy industry in the future. Dr. Robert C. Lewis announces that he has found a way to measure the thyroid secretion rate of calves. Secretions from the thyroid gland boost an animal's metabolism —the life processes.

Using radioactive iodine as a tracer, he found what he believes may mean a new technique in selecting breeding stock—a way to find the best "doers," that will also transmit their good characteristics to their calves.

The radioactive iodine tracer technique was first developed by Dr. E. Paul Reineke, physiologist at MSU, to measure the thyroid secretion rate of rats. Dr. Lewis had to change the method considerably to work it on larger animals, however.


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# Relationship of Forage Protein to Concentrate Needs of Milking Cows

By Dr. S. T. Slack
Cornell University

**EDITOR'S NOTE: The accompanying article is the text of a talk given at the recent Cornell Nutrition Conference for Feed Manufacturers by Dr. Slack. The talk was based on forage research experiments conducted by Dr. J. T. Reid and associates, department of animal husbandry, Cornell, and compiled by Dr. Reid. In it Dr. Slack reveals considerable data on forages that should be a help in leading to greater accuracy in dairy cattle feeding practices and feed recommendations. A table shows the total digestible nutrient and digestible protein contents of hays or silages on a dry basis.**

The main purpose of concentrates in the rations of the dairy cow is that of furnishing the nutrients which are lacking in the roughage portion of the ration. In general, concentrates are needed to provide: (1) energy, (2) protein, and under some conditions, (3) certain mineral elements. As a consequence, the make up of the concentrate mixture should be determined by the characteristics of the roughage which we refer to as "quality."

Unfortunately, the term "quality" roughage, means different things to different people. If some dairymen have alfalfa hay, they feel that they automatically have good-quality hay; whereas, if they have timothy or some other non-legume hay, they believe they have poor quality hay. This is not necessarily true. Some dairymen feel that if they can get second or third cuttings, they have better roughage than when their hay is made from a first cutting. This also, is a fallacious belief.

The stage of maturity of forage at harvesting time is the most important single factor determining the quality of roughages. Despite the fact that this has been known for a long time, it has not been put into practical use. Our feeding rules and practices, particularly those dealing with protein, are based largely upon whether the roughage is legume or non-legume and upon the assumption that roughages contain 50% of total digestible nutrients (TDN).

During the last six years, we have had occasion to study the metabolism of approximately 75 forages by animals. Some of these were pure stands, that is, such single species as alfalfa, timothy, clover and others were mixtures of forages commonly used in the Northeast. Some of these were the result of a first cutting, while others were second and third cutting. Many of these forages were fed in milk production trials.

It is from the data obtained in these experiments that we are able to demonstrate the influence of stage of maturity upon the utilization of roughages by cattle. Likewise, we wish to demonstrate the consequences of these effects upon the amount of protein needed in concentrate mixtures.

The nutritive factors of roughages influenced by stage of maturity which have a bearing on the amount of protein needed in a concentrate mixture are:

1. Palatability or voluntary consumption rate.
2. Digestibility or availability of the energy.
3. Protein content.
4. Availability of protein.

**Palatability** — Dairy cows voluntarily consume forages at different rates. About two times as much dry matter will be consumed from a crop harvested on June 1 in the Northeast as will be consumed from the same stand of forage harvested about the middle of July. The reason for the wide range in intake is that other factors, particularly those which determine leaf content, also influence palatability. However, the stage of maturity is a predominating factor.

**Energy Value**—Not only is early-cut forage consumed in larger quantities than late-cut forage but its energy value per pound of dry matter is greater. In the Cornell experiments, the TDN content of a wide variety of forages cut at different growth stages between May 18 and July 8 was determined.

The TDN content of forages not previously cut or grazed during the same season decreased at the rate of about 0.5% per day following a starting point date of June 1. Most important, the amount of TDN in the forage cut at any date can be calculated fairly accurately from these data. This was found to hold for forages fed green, as a silage or hay, provided that it is first-growth forage and that a disproportionate loss of leaves has not occurred. The rate of decline in nutrient content is the same for legumes and non-legumes.

These observations mean that timothy cut on the same day as alfalfa has about the same energy value as alfalfa or any other plant thus far tested. If there are differences among species of plants, they must be exceedingly small or else our present methods are not sufficiently sensitive to detect them. Nevertheless, the possibility remains that there may be species or strains of plants from which the TDN value cannot always

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be accurately predicted from the cutting date.

Aftermath forages (second, third, etc., cuttings) were found to be relatively constant in TDN content during regrowth periods of five to nine weeks. Although they fall off from about 62 to 57% TDN as growth progresses, this is negligible as compared to the decline for first-growth forages. The value of 58% given in the table is a good safe figure for use in feeding practice. Aftermath forages never have as much TDN as first-growth forages harvested by the first week of June in the northeast.

**Protein Content**—Despite the fact that specie of plant does not influence the energy value, it does have a marked effect upon the protein content. Legumes are higher than non-legumes, but the protein of both kinds of plants decreases greatly as plants mature. The amounts of digestible protein found in legumes and non-legume forages cut at different times are shown in Table 1.

These figures are a little lower than the averages found in the Cornell experiment in order that they will be safe to use in actual feeding practice. Aftermath forages were relatively constant in protein content, but the amount depends upon whether the roughage is legume or non-legume.

**Availability of Protein**—The amount of digestible protein in forages is highly correlated with the total crude protein content and there seems to be a similar amount of protein wasted during digestion regardless of the kind of forage. As a forage approaches maturity, not only does it decline in total protein, but also the protein becomes progressively less available.

**Computing Balanced Rations**

In computing balanced rations, it is necessary to base the computations on digestible protein, instead of total protein. However, the digestible protein needed in a concentrate mixture is expressed in percentage of total protein for practical application in feeding based on the difference being supplied by a given roughage.

In practice, roughage is fed free-choice or all cows will clean up daily in several feedings. A common roughage combination for dairy cows is mixed hay and corn silage. However, many other combinations or single feedings of roughage are employed

Using the data on protein and energy by cutting date, rations have been calculated for varying production levels taking into account varying rates of consumption and kinds of forage. These calculations indicate that concentrate mixtures fed with legume roughage alone need not contain more than 10% of protein.

When legume roughage is fed with corn silage, the protein content needed in the concentrate mixture is less than 13%. Concentrate fed with non-legumes as the sole source of roughage or with corn silage need 13 to 16% of total protein. When the roughage used is mixed legumes and non-legumes the amounts of protein needed in the concentrate mixture will be intermediate between those needed in feeds to be fed with legumes and non-legumes separately. With roughages of second and third cuttings, the problem of supplying enough protein to milking cows is not great because of its relatively high protein content.

The results of these experiments point out that when enough concentrates are fed with the commonly used roughages to meet the cow's need for energy, there is never a need for more than 16% of total protein in the concentrate mixture.

The reason why this is true is this —as forages mature and the digestible protein content declines, the intake and energy value of the rough-


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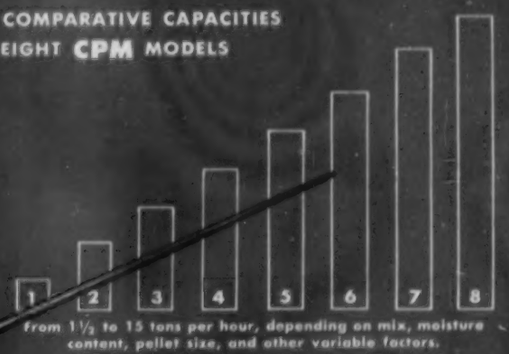


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age also decreases. This causes an increased need for concentrates to provide energy—but, as the amount of concentrates increases, the need for protein in the concentrate decreases. In other words, concentrate mixtures fed with poor-quality roughage need less protein than those fed with high-quality roughages.

Although these experiments are not finished, present conditions are such that we need to press all research that is practical into use. For this reason, an attempt has been made to adapt the results of the Cornell tests to practical feeding conditions. This is made possible by tying to the cutting date.

It is expected that the nutritive qualities of forages grown in different regions (latitudes and elevations) will be different even though harvested at the same time. But, the general effects of growth are the same regardless of the locality. The influence of rainfall, level of fertilization (particularly nitrogen), length of day and/or amount of daylight need to be determined.

In the Cornell experiments, the forages were grown during both drouthy and adequate-rainfall seasons, and under various states of fertility. It seems possible, however, that nitrogen fertilization would influence the relationship between growth stage and, at least, the protein value.

Much more research is needed to determine the effects of some of these factors upon the relationships between growth stage and various nutritive qualities in order to perfect our prediction tools. However, the generalizations worked out to date make it possible for us to balance rations for dairy cows more accurately than we have been able to previously. To give just enough feed without waste, we need to know the cutting date, the amount of legumes, and whether the roughage is made from a first-growth or an aftermath forage.

The results of these experiments show that hay is not just hay. Forages do not have the same palatability, digestible protein and energy values. The earlier they are cut, the higher is their nutritive value.

**Table 1—TDN and Digestible Protein Contents (%) of Hays or Silages on Dry Basis***

| Cutting date† | Non-Legumes: Growth stage | TDN | Dig. Prot. | Legumes: Growth stage | TDN | Dig. Prot. |
|---|---|---|---|---|---|---|
| | | FIRST CUTTING | | | | |
| June 1 | Vegetative | 70 | 13.5 | Vegetative | 69 | 18.7 |
| June 15 | Early head | 63 | 10.0 | Bud | 62 | 14.5 |
| July 1 | Full bloom | 56 | 6.7 | Bloom | 56 | 10.2 |
| July 15 | Mature | 49 | 3.7 | Mature | 49 | 6.4 |
| | | Aftermath following regrowth for 5 to 9 weeks | | | | |
| | | 58 | 10.0 | | 58 | 14.3 |

*Multiplying the above values by approximately 0.9 and 0.23 to 0.27 gives values for hays and silages, respectively, containing the usual amounts of moisture.
†The values given for various dates probably apply to most of the Northeast, but are not expected to apply to the conditions of the South or far West. Latitude and elevation undoubtedly influence this picture.

Bob Vaughan

**JOINS PETER HAND—The appointment of Bob Vaughan as district manager for the Peter Hand Foundation in the territory of Alabama, Mississippi, Arkansas and parts of Missouri, Illinois, Indiana, Kentucky and Tennessee has been announced by Wiley Akins, vice president and general manager of the foundation. Mr. Vaughan has been associated with the feed industry since 1935. He has had extensive experience in feed and vitamin sales, feed formulation, mill management and advertising. Recently he served as manager of the Consumers Cooperative Assn., Feed Division, at Kansas City, Mo. He attended the University of Minnesota where he majored in animal husbandry.**

### Summary

During the past six years, the metabolism of approximately 75 forages by animals has been studied. These forages were pure stands of single species such as alfalfa, clover, timothy, and others were mixtures of species of forages commonly used in the Northeast cut at different stages of growth or maturity.

The nutritive qualities of roughages can be predicted with reasonable accuracy if the cutting date is known.

These data provide greater accuracy in dairy cattle feeding practices and feed recommendations.

## *Livestock Disease Lab Established in Idaho*

BOISE, IDAHO—The leading livestock disease problems facing cattle and sheep growers today are now being studied at the newly established disease research laboratory in Caldwell, Idaho, the Idaho Cattlemen's and Wool Growers' Assns. jointly announced recently.

The laboratory, part of the University of Idaho's experiment farm in Caldwell, was set up in the Boise Valley in order that it would be in the center of a great livestock area, said M. C. Claar, secretary of the wool growers group.

Dr. Floyd W. Frank, formerly on the veterinary staff at the University of Wyoming at Laramie, arrived in Caldwell recently to head the new laboratory. Both Mr. Claar and Leon Weeks, secretary of the cattlemen's association, hailed the laboratory as a significant contribution to the livestock industry by the university.

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**No** extra work to do or pay for.

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**No** residual hormone to cause concern.

Adding Lipamone to your feed is easy – 1 lb. of Lipamone plus 9 lbs. of carrier makes 10 lbs. of pre-mix; 10 lbs. of pre-mix in 1 ton of broiler finisher makes a Liponized best-seller.

Premium prices are being offered by alert processors who recognize the quality features of Liponettes.

We are urging growers to discuss Lipamone with their feed dealers. Are you fully acquainted with the Lipamone story? We'll be glad to give you complete information and to answer your questions.

*important new words for the broiler industry*

**Lipamone:** a free-flowing feed additive for broiler finishers. It contains 14% dienestrol diacetate, a feminizing hormone, in corn distillers dried grains.

**Liponizing:** the process of adding LIPAMONE to feed, or feeding birds the LIPAMONE-supplemented ration.

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**CONTEST WINNERS—In a recent sales contest held by Prater Pulverizer Co. of Chicago, John Lingard was the top man, winning for himself and his wife a trip to Bermuda. Howard Baumann won second prize. Here Mr. Lingard is being congratulated by G. F. Thomas, president of the company, and Mr. Baumann is being handed his prize by Bill Earl, sales manager of the company.**

## *Future Dairy Problem Will Be How to Produce Enough, Speaker Says*

CHICAGO — State and national winners in the national 4-H dairy awards program were told recently that the biggest problem facing dairymen in the next 50 years will be to produce enough milk to feed the world's rapidly expanding population —not to dispose of surpluses.

The winners, in Chicago for the national 4-H Club Congress, heard this forecast at a breakfast given in their honor by the Larro SureFeeds Division of General Mills, Inc., donor of awards for the dairy program. The speaker was Dr. C. B. Knodt, head of dairy and beef research at General Mills Larro Research Farm.

"By 1975," Dr. Knodt said, "there will be 38 million more people in the U.S. alone. At present rates of milk consumption, this means that dairy farmers will have to either add an additional 6 million dairy cattle to their herds or will have to increase the per cow production by 1,323 lb. per year."

Dr. Knodt emphasized that the present day dairy industry is a big business. He pointed out that two thirds of the nation's farms have dairy cows. On these farms are 22 million producing dairy animals. "The annual production of these cows would make a river of milk 50 ft. wide, 9 ft. deep, and 750 miles long—the distance from Chicago to the Gulf of Mexico," he said.

This huge production, he pointed out, puts the whole industry into a tight competitive situation . . . not only competitive within itself but competitive with other sources of food for the consumer's dollar. Dr. Knodt called upon farmers to meet this competition through increased production efficiency, new product development, and improved methods of promoting and marketing milk and milk products.

He credited dairy farmers with making long strides in improving their efficiency and in upgrading the quality of their cattle, citing the 20% increase in production per cow since 1930 and the increasing mechanization of dairy farms as examples.

"But," he warned, "the whole industry must keep trying to find ways to increase this efficiency even further. On the farm this calls for better management."

Dr. Knodt urged his listeners not to overlook the importance of research. He emphasized the need for new ways to cut costs through development of new products and merchandising methods. "Research is expensive," he said, "but it is a necessary cost of doing business. Research is essentially insurance for the future."

### MILL NEARS COMPLETION

SULLY, IOWA — Virtually completed is the new mill house of the Sully Cooperative Exchange which, complete with equipment, will cost $100,000. When completed the mill house will be used for mixing, hulling and grinding feeds. Expected to be completed by the first of the year at a cost of about $50,000 is the cooperative's new elevator.

BIGGER SWEET FEED PROFITS

TEXAS CYCLONE

feed mixing units were made to work as a team—or to fit in with existing facilities. Shown here is the TEXAS CYCLONE FEED MIXER in combination with the TEXAS CYCLONE SWEET FEED MIXER—the finest mixing combination you can find. Molasses mixing is made easier and better with a patented spray process that insures blending. Write for free description folder.

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# Virginia Agricultural Economists Take a Look at Poultry Outlook

BLACKSBURG, VA. — What's ahead pricewise for the poultry industry in 1956?

Agricultural economists at Virginia Polytechnic Institute say present indications are that egg prices will be favorable throughout the year; broiler prices will be down the first half of the year, but show some improvement thereafter; and turkey prices will be less favorable than in 1955.

Here is the way the VPI economists analyze the situation:

The low price of eggs in 1954 caused flock replacements to be cut about 15% in 1955. Consequently, egg prices are quite favorable, and many producers are holding over their old hens.

If a normal production pattern continues through the rest of the fall and winter of 1955-56, production will rise only slightly, since it depends greatly on the older hens which do not lay as well as young hens, and which will have to go through a molting period. This lower than normal production will keep prices up, and since feed prices will be lower, producers will probably buy more fall-hatched chicks for laying flock replacement.

By April and May the effects of fall-hatched chicks will be felt. However, prices probably will not be high enough to cause an excessive spring hatch. Egg prices during the spring of 1956 will likely be above the 1955 spring price, but the late summer prices will likely be below the 1955 late summer price.

Broiler prices in 1955 have been above those of 1954 in spite of an increase of 5% to 6% in marketings. An explanation of the strength of broiler prices, according to the VPI economists, is that (1) fewer cockerels were marketed because of the sharp reduction in laying flock replacements—broilers replaced them, and (2) old hens were culled at a lower rate because of favorable egg prices—fewer mature chickens were on the market in competition with broilers.

During the first half of 1956 the situation will probably be reversed. Flock replacements are likely to go up and old hens kept over will be culled, resulting in increased supplies of chicken meats competing with broilers. Lower prices for broilers are expected during the first half of 1956. As supplies fall, broiler prices will improve the second half of the year.

Taking a longer look, the economists say broiler production will likely have its most rapid development in the less productive agricultural areas and the least industrially developed areas of the South. Every established production area must keep pace with advancements in efficiency or else suffer the consequences—lower prices or loss of markets.

### Production Shifts Expected

As better alternative opportunities become available, many growers will quit broiler production. Increased non-farm employment or a shift to other farm enterprises will occur, the economists predict.

Only about half of the 1955 turkey crop was sold by Nov. 1. The rest will be sold by January. Prices between October and the end of the marketing season will probably not be much different because the light breeds, usually ready for market the last few months of the year, are in short supply. Also, many of the heavy birds which are normally sold in late November and December were sold earlier at light weights for the roaster trade.

With feed costs well below last year, turkey profits in 1955 should be good. This could result in substantially higher production in 1956. The economists advise turkey growers to watch (1) the January report of farmers' intentions to grow turkeys, (2) the volume of turkeys in cold storage at the season's peak, and (3) the mid-February report on the number of breeder hens on farms Jan. 1. These are the three best clues for judging the 1956 turkey outlook, they say.

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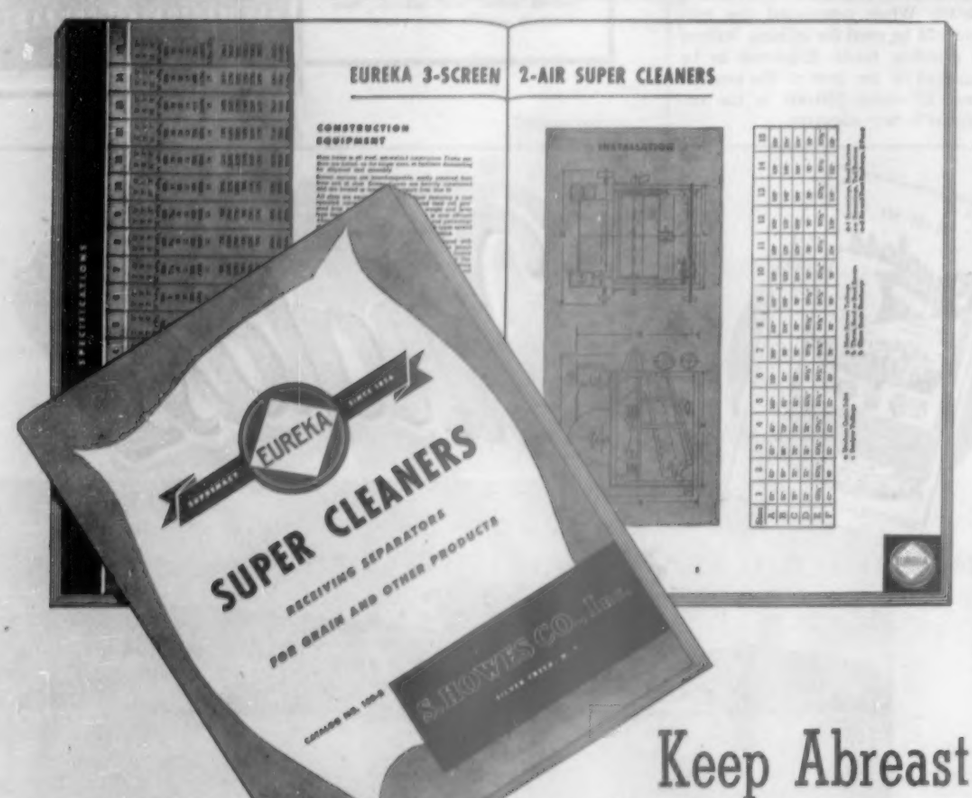
# Mill Insurance Firm President Retires

DES MOINES, IOWA—H. B. Carson, 65, president of Mill Owners Mutual Insurance Co., announced his retirement recently. With the firm since 1909, he became secretary of the company in 1928 and was elected president in 1940.

The new president of the company will be Len K. Sharp who is moving up from his position as vice president and secretary. Other new officers are John Wise, vice president and secretary; L. R. McKibban, vice president and treasurer, and F. D. Meurer, vice president and assistant secretary.

### KILLED WHILE HUNTING

HOPE, KANSAS — Ronald K. Chandler, manager of a grain elevator at Ramona, Kansas, was killed while coon hunting Nov. 19 with five other men. A rifle he had leaned against some brush was knocked over by a dog and the bullet struck his heart. He is survived by his widow.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Catalog 180-B describes in detail each piece of equipment. Gives construction and operating details, screen arrangements, installation diagrams, dust collector recommendations, power requirements and cleaning capacities on various grains.

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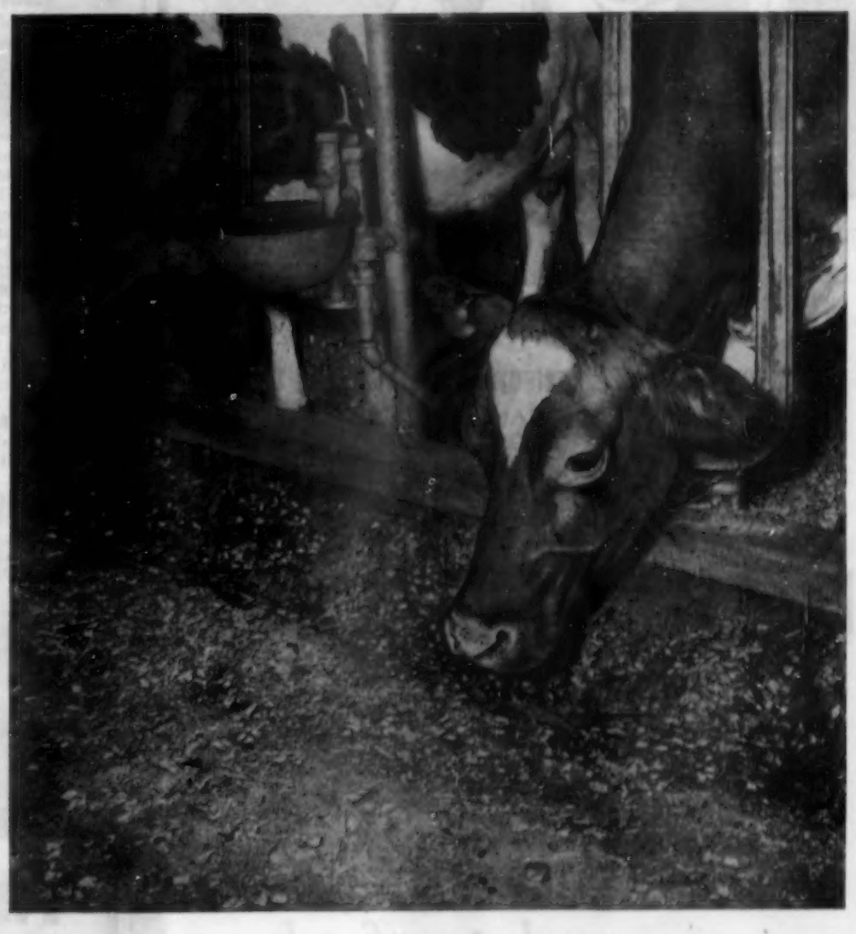

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In addition to furnishing its equivalent in protein, "Two-Sixty-Two" helps unlock extra nutritive values for cattle and sheep—by stimulating rumen bacteria which break down feed fibers in home-grown roughages.

### Available everywhere...

Agents located in key cities (listed below) put "Two-Sixty-Two" within trucking distance of feed manufacturers, large and small. This means faster service . . . prompt shipments to help you keep pace with any increased demands on your inventory.

### Free-flowing...

The anti-caking agent in "Two-Sixty-Two" assures feed manufacturers a nitrogen source of protein that flows freely and mixes thoroughly . . . even under severe conditions of heat and moisture.

This bag of "Two-Sixty-Two" was cut open for inspection after warehouse storage in a hot, humid region. It was in excellent, free-flowing condition.

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UNIFORM QUALITY EVERY TIME---
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## DOG FOODS

(Continued from page 38)

as well or better than puppies, but this is probably due to the eating of larger amounts of food per unit of body weight by puppies, the tendency toward diarrhea and the greater task of the intestine in handling more food per hour. Old dogs, during periods of low intake of an element such as calcium, have more difficulty in retaining their body reserves. Hence a puppy may retain its calcium while an old dog parts with some of its reserves of the bones when the food supply is deficient.

**Tastes Vary Widely**

The tastes of dogs for specific foods vary widely and may have some association with breeds but this has never been tested adequately. Thus in our kennel we have had two Dalmatians for some years that are very fond of salads. Each will eat a pound or more of chopped tomatoes and lettuce while most of our dogs will not touch such foodstuffs. When these Dalmatians were purchased, they both had demodetic mange and were used for some years in developing the phenothiazine remedy for this affliction. Possibly their taste for salads is associated in some way with a unique metabolism that made them subject to red mange.

Many tests have been made in the course of two decades in attempting to evaluate feed ingredients, physical forms of feed and the relative merits of complete feeds. If any one component of feeds is the dominant factor in taste it would seem to be the fat. However, there are many subtle flavors and odors associated with raw and cooked meats that are not understood for dogs or men. Undoubtedly with concentration upon the product one could isolate the factors in meat that appeal to dogs or the flavor in liver that enchants the house cat.

The relative appeal to two different dog candies is not hard to evaluate because the candies are only fed as treats and do not constitute the day to day diet of the dog. In evaluation of feeds, however, one is confronted with the problem of monotony when dogs like those in a kennel eat the same feed week after week.

If dogs are kept slightly hungry and a given feed mixture is adequate nutritionally there is no evidence that the dog tires of the feed. The same seems to hold true for many people who eat large amounts of rice or potatoes daily throughout the whole of life.

**Two Types of Customers**

The dog feed industry tries to satisfy two different types of customers, namely the pet owner whose dog may be liberally supplied especially with fats in the form of table scraps, and the kennel operator who desires a diet that keeps dogs in sound condition for their lifetime activities.

The problem of feeding dry feeds such as meals, pellets and kibbles in the dry form or mixed with water seems to vary with individual dogs. Hungry dogs like all forms. These dry feeds must have some water added to them before they can digest and pass from the stomach. Therefore it seems unimportant whether the water is added before the dog eats the feed or if the dog drinks water after eating.

The technique of studying the absorption of the components of feeds by fasting dogs for 48 hours, feeding them weighed test meals, putting the dog to sleep, removing the gastro intestinal tract after tying off various segments and then analyzing these segments for their content, affords much useful information. This is the final contribution for dogs that must be sacrificed. Using chromic oxide as a marker in such studies makes it possible to determine the area of

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TRACE MINERALS
*for* feed concentrates

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| COBALT CARBONATE | IRON OXIDE |
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*Uniformity* and *good quality* are characteristics of all Harshaw Trace Mineral Compounds. These dependable necessities enable you to maintain the correct percentages of essential elements in your concentrates and furnish a complete mineral supplement to the feed industry. Let Harshaw supply your requirements from convenient stock locations.

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National Alfalfa, the world's largest producer of alfalfa products, guarantees you top quality, the year 'round from one dependable source. Always call National to fill your alfalfa requirements.

Dehydrated 17% **REGULAR MEAL**
Dehydrated 17% **MEAL, OIL TREATED**
Dehydrated 17% **REGROUND PELLETS**
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absorption for some components of the diet.

In the course of studying intestinal absorption by such methods, we always measure the hydrogen ion concentration. We have been surprised to learn that the food in the stomach of a rabbit is almost always kept at a much greater acidity than is the food in the stomach of a dog or rat. We have even fed the same dog feed to all three species. The rabbit stomach is usually kept at a pH of 2.6 while that of a dog or rat works at a pH of 3.5 to 4 when it contains food.

The average physiology text gives one the impression that the dog's stomach is very acid because most of the studies have been made upon dogs with fistulae or gastric pouches. Hence the acidity of the gastric juice is usually discussed without regard to the amount of acid and the buffering power of the diet.

Little attention is ever paid to the functioning of the stomach of the rabbit and the average person has a hard time realizing that food in the stomach of the rabbit is kept much more acid than is that of the dog. It is likely that the rabbit sterilizes its food in the stomach far more effectively than the dog does. Since the rabbit eats the night excreta regularly, this strong acidity in the rabbit stomach may be part of the cycle of food preparation.

### Synthetic Flavors

From time to time we have attempted to evaluate extracts and synthetic flavors sold to dog feed manufacturers. We have never found one that functioned as far as the dog was concerned. Such products can probably be discovered but no one has ever been willing to invest the time and money in the research needed. We have never seen any data published or unpublished, that proved that any synthetic flavoring material was favored by dogs.

The flavor of raw meats is acceptable to most dogs. Dogs reared upon dry feeds may require a few days training to develop a taste for raw meats. Unless dogs are very hungry, however, they will not eat the raw flesh of dogs.

During the past few months, we have been testing meat sterilized by high voltage beta radiation. Even after this meat has been subjected to two or four times enough radiation to sterilize it, the taste appeal seems to be the same as that of raw meat. Since the use of waste radio active materials will ultimately make such means of sterilization very inexpensive and since such meats may be packaged in plastic and other nonmetal containers, we may observe a substantial use of such meats in the not distant future. We now have 12 female beagle puppies that are being reared upon diets with half of all the calories supplied by such radiated meats.

New problems of tastes of dogs will undoubtedly be encountered as various laboratories undertake the feeding of such diverse meat by-products as blood, spleen, udders and intestinal tract after these are sterilized by radiation in the form of either beta or gamma rays. Since radiation sterilization affects the composition of the fats and since fats are one of the primary sources of flavor for dogs we may expect such meats to develop different degrees of attractiveness to dogs.

### Kennel Construction

Before considering special problems in testing feeds it may be well to give a little attention to kennel construction. One of the greatest services that could be rendered to producers of dogs by the feeding industry would be to teach better methods of building kennels, the maintenance of sanitation and the handling of dogs. A few feed manufacturers are now rendering excellent service in this field by the publication of very instructive and well written leaflets.

When kennels are built they should be so constructed that one dog will not come in contact with the excreta of another. This can be done by the use of concrete barriers between pens and by the use of flooring for pens composed of expanded metal. After eight years use of expanded metal for pen bottoms we have found no evidence for the injury of the feet of dogs.

If pen bottoms are raised off the floor about a foot it is possible to put dry absorbent material under them and thus avoid the daily washing of floors which often leads to the high humidity in kennels. Even whelping

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Is the Solvent Process
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OF COURSE! Note these authoritative findings from recent state college tests:

Ohio Agricultural Experiment Station:
1. No difference in palatability after a comparative test with milking cows.
2. Body weight changes, milk production, other feeding values not changed.
3. Hair and condition the same.
4. Solvent extracted linseed meal has much greater water absorptive capacity.

Iowa Agricultural Experiment Station:
"The factors responsible for 'bloom' in cattle fed linseed meal proved not to be tied up with the unsaturated fatty acids in the oil. Linseed without added oil should be just as effective as old process linseed meal in promoting high finish."

N. N. Allen, Journal of Dairy Science 33, 1950:
"No practical difference in palatability of the expeller and extracted meals when used in a dairy cow ration at the level of 28 percent."

McGill University:
McGill University scientists stated: "Quite aside from its animal nutrient content, this product is one of the most beneficial known for toning up rundown animals and producing a 'bloom' on stock. It is also laxative and cooling to the digestive system, which fact adds another sphere of usefulness to its credit."

These and other scientific tests continue to show that Solvent Extracted Linseed Meal—like Minnesota 36%—has all the advantages of "old process" expeller meal, with some new ones added.
So whether you sell it straight or mix it into your own feed, specify Minnesota 36% Linseed Oil Meal—available as Meal . . . Pellets . . . and Grits.

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pens can be constructed with floors of expanded metal if a whelping box is provided for the very young puppies.

Care in construction is important if labor costs are to be kept low and dogs are to be kept relatively free from parasites. Parasitized puppies may complicate feed testing to the extent that growth data reflect the activities of the parasites rather than the quality of a feedstuff. The common practice of "deworming" a puppy before testing with one of the common chemicals such as butyl chloride may lead to questionable results because only the parasites in the intestinal tract at the time the chemical was fed are destroyed. The intermediate forms in the rest of the body are unaffected.

### Control of Parasites

This control of parasites by chemicals raises the problem concerning the use of chemicals as an accepted constituent of dog feeds or putting chemicals into the drinking water of dogs. Both of these methods may come into use in time.

One method of testing chemicals for destroying specific parasites in puppies has proved simple and useful in our hands. The litter of puppies when about two weeks old is divided into halves for test purposes. Half of the puppies are then given the chemical to be tested. This may be repeated a week or two later. Just before weaning samples of excreta are taken from individual puppies and examined for ova. This can be followed by the conventional deworming treatment and the excreted worms counted if the puppies are confined to stalls until dead parasites are excreted.

The question arises if puppies are whelped on expanded metal bottoms if they will tend to be anemic like swine. Dogs and pigs are quite different in this respect. We have run a long experiment in which we swabbed the udders of part of the bitches and then measured the red blood cells and hemoglobin of puppies. The values are identical whether the udders of the bitches are swabbed with iron and trace minerals or not. Likewise we have fed puppies shortly after weaning with supplements of iron, liver and vitamins but have not changed the blood picture.

In a long series of studies we have been establishing the normal values for the blood counts of beagles of different ages. The literature contains only a limited amount of such data upon healthy, purebred dogs. Much of the blood literature is based upon mongrels probably suffering from both parasites and miscellaneous diseases.

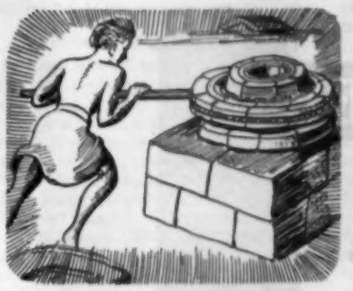
One of the problems of the future is to develop extensive physiological data upon one or more breeds of dogs so that one can know when he has deviations from the normal.

### Toxic Chemicals

Before leaving the problems of parasites and chemicals it might be well to mention chemicals that may get into dog feeds that are toxic or injurious. A few times each year we are brought samples of feed that are supposed to have made dogs sick or killed one. We usually feed the sample to a dog and observe the results.

During the past three years, there have been three events that have caused us some concern. About two years ago a small feed manufacturer brought us some of his feed and reported that some dogs eating this were reported to be paralyzed. It took only a few days to paralyze a dog by feeding it his mixture.

It took three months to learn that Megasul was the cause of the paralysis and that this had gotten into the dog feed because a batch of poultry feed had been mixed in the same equipment just prior to the mixing of the dog feed. This illustrates the importance of knowing about the relative toxicity of chemicals for various species of animals. At least two other makers of dog feeds have run

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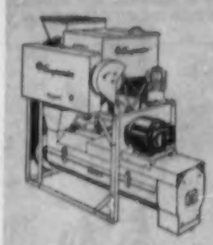

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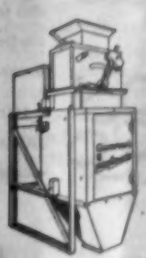

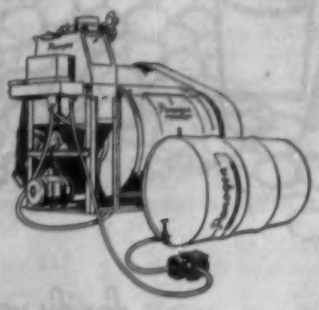

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into this same problem with Megasul poisoning.

A second example comes from the halogenated naphthalene wood preservatives that came from Germany and were used for grease stabilizers. You will recall that one of the first sources of trouble from X disease was found among calves fed stale products from a bakery. The toxic product is supposed to have come from grease that dripped from some machine and was swept up with the waste bakery products from the floor although I am not certain how sound this hypothesis is. At least dogs are often fed waste bakery products but dogs seem less sensitive to the products causing X disease than are calves. You may recall that Prof. P. Olafson just reported finding this X disease among calves in far away Jerusalem after the calves had licked some grease from farm machinery.

A third example illustrates the care that must be exercised by manufacturers of dog feed. For about 10 years we have used a commercial dog feed in our small animal laboratory for rats because the feed is sufficient for good growth and reproduction without supplements. Within the university we supply young rats to various researchers. For some years we have supplied one worker with young rats for the assay of stilbestrol. He has been using a conventional assay procedure based upon a quantitative response in the weight of the uterus to a given amount of stilbestrol. For the first time last spring our young female rats could no longer be used because the uterus had already increased in weight. All evidence indicates that stilbestrol was finding its way into our stock diet of dog feed. Thus far we have had no trouble in reproduction in either our dog or rat colony but we have been watching our records closely.

With the increased use of chemicals in various animal feeds, we must be continuously alert to the possibility of these finding their way into the dog feeds with possible deleterious effects. Possibly someone should issue a bulletin for makers of feeds to discuss these chemicals at regular intervals. The difficulty in our laboratory is to learn the toxicity for dogs of products that are being put into another feed such as one for poultry. Furthermore it is difficult to keep informed of the relative volume of chemicals being used at any one time because the rise and fall in the use of a given product are quite rapid.

**Testing of New Ingredients**

In testing ingredients for dog feeds, the methods that are the most useful are digestion trials that can usually be completed in a half year, growth studies with puppies that take four months to a year and reproduction studies that take three or more years. It costs $5 to $10 a week to keep a dog in a boarding kennel. It must cost as much or more in a good research kennel so testing is expensive.

A few makers of ingredients try to push them into the market without testing. A few years ago when a very hard fat was put into the market, we had difficulty in even obtaining a supply. After we completed digestion trials using the fat and found much of it could not be absorbed by the dog, we never even received a reply after we sent the maker of the product a free report. A maker of dog feeds had financed the study whereas it would seem to us that this should

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have been done by the maker of the fat.

Even though we have never found any marked differences in digestibility of feeds or ingredients among different dog species we still try to use several breeds for digestion trials. The use of chromic oxide in such digestion trials has lessened the labor since one does not need to collect all the feces for a period of ten days or two weeks. This method also lessens the chance of error if some caretaker discards some of the solid excreta. In our laboratory Dr. L. E. Lloyd devoted a full year to testing the chromic oxide method with dogs and found it to be accurate.

In balance work we have used breeds of various sizes from the Toy Manchester to the Great Dane. We believe they give results that are equally reliable and that the small breeds could be used more extensively. Our metabolism cages which were designed by John Pinkos have proved very useful. They are made to handle either two small dogs such as beagles or one large one such as a Dane.

In order to reduce the odors in our analytical laboratories we have provided equipment at the kennels for sampling and preparing the aliquots of feed, feces and urine. In preparing samples we make use of both the wet methods with a Waring blender and the classical drying procedures. Each procedure has specific merits under different conditions.

### Reproduction and Lactation

In testing various mixtures of feeds we have found that some are quite satisfactory for growth but fail in the stress of reproduction and lactation. Since it is common knowledge that an immature female dog often fails to care for puppies, we do not start the first breeding until the young bitches are about a year old. Reproduction in many females is erratic. Several litters may be small or the bitch may fail to conceive. One may then find that several large litters are produced and carried through lactation.

Thus there is much variability in reproduction. This has caused some concern to amateurs who start producing puppies under contract and assume that each bitch will wean two average sized litters per year as they may do in a very small kennel. In a large kennel with 50 or 75 bitches, the reproductive performance will yield about one average litter per year. This makes the time longer or the number of bitches larger if one is testing a feed for adequacy in gestation and lactation.

Very little research has ever been done in regard to lactation in dogs. A few analyses have been run upon dog milk with no attention to breed and volume produced. Some of our studies indicate that a bitch in the peak of lactation must secrete an amount of milk comparable to that given by a cow producing 100 lb. a day. We make use of an old German method which gives a rough estimate of the amount of milk secreted.

Little attention has ever been devoted to the maintenance of fertility in the male. Some studies are now being made in this field in the interest of radiation effects, but these researches are not designed to give answers about nutrition. Such research may give questionable answers however, if the variable under test is radiation and the diet is marginal in nutritive value for the male. Hence laboratories engaged in such research will probably have to study nutrition before they can get correct answers for the atomic energy commission.

### Exercise

The problem of exercise as interrelated to nutrition has long been neglected in dog research. We constructed a practical exerciser with variable speed and inclinations. A start was made in such studies with Danes by John Pinkos but we have not found any graduate students interested in such research and have had no funds to provide for it.

### Problems That Need Solution

It may be well to list a few of the practical problems that need attention.

The quality of meat scrap is a perpetual problem in the dog feed industry. During the past few years several reports have been made that meat scrap is carrying Salmonella. This has caused the most concern in large mouse laboratories that use dog feeds for a stock diet. There has been some fear that children might acquire Salmonella from dog feeds. At present there seems little chance of cleaning up the meat scrap. Hence for some time we have been developing feed mixtures that contain no meat scrap.

A second problem of some interest concerns the nutritive value of the intestines and stomachs of animals. Compared to muscle meats these seem deficient in methionine and possibly other amino acids. This needs more study so that these products can be properly supplemented if used in frozen or canned dog feeds. Careful evaluation of all meat by-products such as udders is needed.

Little study has been given to chicken wastes. It would seem to be a problem of the poultry industry to evaluate these for dog and cat feeds so that they can be used to good advantage. No one has been willing to finance such research.

As essential amino acids have become available at modest prices, their usefulness in dog feeds needs to be determined. In preliminary studies with methionine, we found it useful in meal type feeds containing low levels of meat scrap. In biscuit type feeds it looks as if both methionine and lysine may be important but much more research must be completed with growing puppies.

In the case of biscuit type feeds or kibbles, it is probable that many of the formulas are too complex and expensive. For some years we believed that biscuit type feeds were

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never satisfactory as a sole item of diet in the growth of puppies. Many kennels still believe this. During the past few years, however, in one series of tests upon a commercial biscuit we have produced excellent puppies up to six months of age and the growth rate has been normal. A careful evaluation of the ingredients of biscuits would probably eliminate some and make some new ones worth while.

Only a few of the many problems have been described. One could list equal needs for canned and meal type feeds.

**Financing a Problem**

The major problem of those few laboratories engaged in the study of dog nutrition is continuous financing. As noted earlier, it is practically impossible to have long-time tax supported research in the case of dog nutrition, comparable to studies with other farm animals. Companies that support research usually want an immediate answer to some problem that faces them. Quick answers are seldom sound and really represent a poor investment because they may yield misinformation that persists in faulty practices for years.

Temporary grants that come and go suddenly are very unsatisfactory for researchers because they create a condition of insecurity among workers. Hence one must either offer inflated salaries to compensate for the insecurity or struggle along with poorly trained technical assistance.

After many years of experience I am convinced that the dog is one of the most difficult animals to study in nutrition because of the great divergence in size, the ease of acquiring diseases and parasites, and the emotional factors that tie dogs to man.

The problems of dog nutrition are solvable but I believe the burden of solution must rest upon the feed industries.

# Use of Wheat for Feed Suggested as Solution to Canadian Surplus Problem

WINNIPEG — A livestock feeding program, on a huge scale, has been suggested as the key to the solution of Canada's wheat surplus problem.

The plan was presented to the Gordon Commission on Canada's Economic Prospects by J. E. Brownlee, president of United Grain Growers, Ltd., at hearings in Calgary, Alta., Nov. 25. The object would be to channel border-line grades of wheat into livestock consumption channels instead of using them as food for humans. Mr. Brownlee pointed out that much low grade wheat is being used in both the U.S. and Canada for flour production instead of the more costly better grades.

Low grade wheat, according to the UGG plan, could be kept out of the flour mills by artificially degrading it through the mixing-in of small quantities of vegetable-dyed kernels.

Mr. Brownlee conceded that there is no shortage of livestock feed. However, he argued, there is no great surplus either and the world livestock feed market was well able to absorb some hundreds of millions of bushels of wheat. Even such quantities would add little percentage-wise to world feed supplies. The program, giving publicity to the use of wheat for feed, would aid in overcoming the moral prejudice of Europeans against feeding to livestock grain that could be used for humans.

Commenting on wheat dumping, the UGG brief noted that while U.S. operations of this type have attracted most attention, a relative newcomer to export ranks, France, is now attempting to force into markets an annual surplus which may reach 90 million bushels. France, an importer in 1949, subsidizes wheat production, it was pointed out.

The Alberta Institute of Agrologists cautioned the commission against recommending an expansion of farm lands through the conversion of forested areas or further investment in land irrigation until more food markets are developed.


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# APHF Convention Space to Be Offered

KANSAS CITY, MO. — Exhibit space for the 1956 American Poultry & Hatchery Federation convention in Minneapolis July 17-20 will go on sale March 22-23, according to O. H. Green, APHF president.

The 1956 convention will be held at the Minneapolis Auditorium. Plans are under way to make the 1956 convention equal to the record-breaking 1950 exhibition, also held in Minneapolis.

Following its usual custom, the federation will make its initial offering of space at a space sales meeting on the actual convention site. This will take place on March 22-23 from the floor of the Minneapolis Auditorium exhibit hall. Firms will select space on the basis of the dollar volume invested in exhibit space at the 10 preceding APHF conventions.

It is not necessary for a firm to have a personal representative present at the space offering in Minneapolis to protect its selection priority, Mr. Green said. It can (1) notify APHF ahead concerning the amount of space it would like to reserve; (2) call Edwin Gray, exhibit manager, at a pre-arranged hour March 22-23 and reserve space, or it can (3) furnish APHF a list of several exhibit choices by mail ahead of March 22.


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# Feed Service Bulletin Board

*Helpful Notes on Feeding and Management for Feed Men and Their Customers*

## Warm Water Important

Providing plenty of warm water for dairy cows to drink in a place protected from cold winds during winter months is important to keep down feed costs and maintain milk production, according to Leo Fryman, extension dairy specialist at the University of Illinois College of Agriculture.

Mr. Fryman says it is cheaper for a dairy farmer to use coal or oil to heat water before the cows drink it than it is to use expensive feeds to do the job after the water is in the cows' stomachs.

If dairy cows have to drink cold water, he explains, they will use a good part of the feed they eat as fuel to warm it. Cold water also slows up a cow's digestive process and may stop it altogether when a large volume of cold water first enters the stomach.

Mr. Fryman suggests that cows be turned out for water at least twice a day in the winter if watering cups are not provided in the barn. He says that cows will drink more water under this system and may produce as much as 10% more butterfat than if they are watered only once a day.

## Random Sample Testing

Laying-flock owners are getting a lot of new pointers on hens and egg production from the random sample type of egg-laying contests, according to S. L. McHenry, extension poultryman at the University of Delaware.

For one thing, the tests have helped demonstrate to poultrymen that large body size in a laying hen isn't so important as once thought, he says. Other things being equal, the smaller the bird the more profitable she will be for market—egg production under present-day cost and price conditions at least. Some of the random sample tests results also point to the idea that the leghorn hen faces some very tough competition from some of the small strains of the "heavy" breed birds. However, the best strains of the leghorns seem to have an edge on the best strains of the heavy breeds, if you go by the results of some of the random sample tests, Mr. McHenry points out.

Many chick buyers also are overly concerned with egg size, the Delaware specialist states. Yet recent results from one of the random-sample kind of egg laying contests shows that eggs weighing more than 24 oz. to the dozen brought only about 4½¢ doz. more than eggs which weighed less than the 24-oz. figure.

At this rate, if a bird lays 200 eggs in a year and 30% of them are small ones, her egg earnings will be only about 20¢ less than if she laid nothing but large eggs, Mr. McHenry points out. To make up for this 20¢, the small-egg bird needs only to lay six or eight more eggs than the large-egg bird. So it doesn't pay a poultryman to go after jumbo egg size if he has to sacrifice on egg numbers, Mr. McHenry concludes.

## Injuries Cut Hog Prices

Proper hog handling to avoid bruises and injuries is especially important if farmers are to receive top prices this winter, according to William Zmolek, extension livestock marketing specialist at Iowa State College.

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that packer and order buyers are more alert than ever for indications of carcass damage, Mr. Zmolek says.

Hog bruise losses in recent years have averaged about 8¢ per head on every head slaughtered, or about $1.05 on every head bruised, the Iowa specialist points out. The total hog bruise loss amounted to about $5 million in the U.S. in 1954.

Buyers of slaughter hogs are always alert for indications of mishandling and hidden bruises in order to keep their loss as low as possible. This will be more true than ever this year because of the high volume from which to choose, Mr. Zmolek believes.

He estimates that three hog bruises out of five result from abusive handling—canes, whips, clubs, kicking and prodding—all of which is unnecessary. All other bruises caused by crowding, trampling, nail punctures and the like can also be reduced through good facilities and commonsense marketing, he says.

## Records Show Income Up

Farmers who keep financial and production records in cooperation with the Iowa State College Extension Service throughout the state showed an average increase of 2.6% in their gross profits in 1954 as compared to 1953, according to H. B. Howell, extension farm economist at Iowa State.

This increase came although the index of prices received by farmers dropped about 4 points and the index of prices farmers had to pay increased about 2 points.

Mr. Howell says the slight increase in income was due to a small increase in corn and oat yields per acre and a larger volume of livestock handled on these farms in 1954. Hog sales represented nearly half the cash income on these farms and hog prices averaged slightly higher in 1954 than in 1953.

Mr. Howell points out that records were studied for 1,064 farms. Most of them are above average farms. The increase in returns was not uniform throughout the state. The farms in eastern and central parts of the state showed good income increases. The southern area showed practically no change since 1953—and the 1953 income there was low because of poor corn yields. The northeast Iowa dairying area showed a 3% decline. Western Iowa farms had the biggest drop in net farm income—7% in 1954 from 1953.

The increased income in eastern and central Iowa was due to good crop conditions and the high proportion of income from hogs, Mr. Howell says.

## Cool Weather Affects Poultry

Hens do their best when the temperature is 55° to 60° F., says E. D. Parnell, professor of poultry husbandry at Texas A&M College.

He suggests that poultrymen close the house to keep the wind from blowing directly on the birds. The poultryman should also keep a close observation to keep the house as comfortable as possible.

Mr. Parnell says that poultrymen who are feeding all mash rations need not change the ration during cool weather. If the flock is on grain and mash, there should be an increase in the grain during the cool weather. Another item that should be watched is the drinking water. The birds should have plenty of good water during the winter, he advises.

By following good management during the winter, the poultryman can keep his flock in high egg production, says Mr. Parnell.

## Tailoring Livestock

Beef cattle and hogs will pay off best for the farmer who tailors his livestock farming to fit his feed supply this fall and winter, says Fred Giesler, University of Wisconsin livestock specialist.

Yearling steers are the best beef cattle choice when there is plenty of coarse roughage. Yearlings will make good use of corn stalks and hay, he points out, and calves are a better bet for farmers with a lot of grain. They will double their weight—on good feed—between now and next September, and they don't take as much of an investment as yearlings.

Mr. Giesler urges farmers to top out and market hogs at 200 lb. Prices are already low and won't strengthen much until after January, 1956. Marketing at this weight is good because it takes about 120 lb. of additional feed to put on another 100 lb. of gain for each hog after it reaches 200 lb.

The extra money that you would get after hogs reach 275 or 300 lb. won't make feeding them that long profitable. It's better to get rid of the 200-lb. hogs and make room for feeders or fall-farrowed pigs.

Mr. Giesler says hogs will have a meatier carcass if they get a ration containing 14 to 15% protein. The common practice with hogs used to be to feed 12% protein, or even less, but meatier hogs need the higher percent protein ration, he explains.

## Wisconsin Hog Show

MADISON, WIS.—The 1956 Wisconsin Spring Market Hog Show is scheduled for March 1-3, according to Bob Thayer, secretary for the Wisconsin Livestock Breeders Assn., and Fred Giesler, University of Wisconsin livestock specialist. The event will be held at the Dane County Fairgrounds in Madison.

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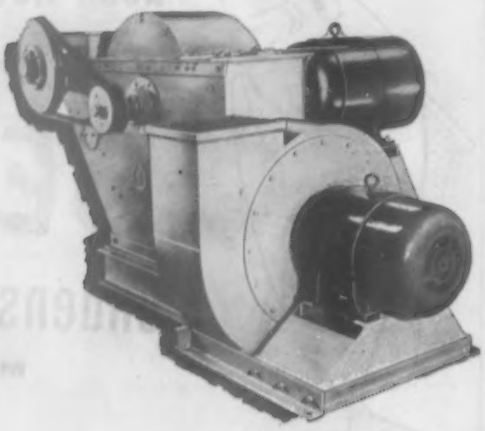

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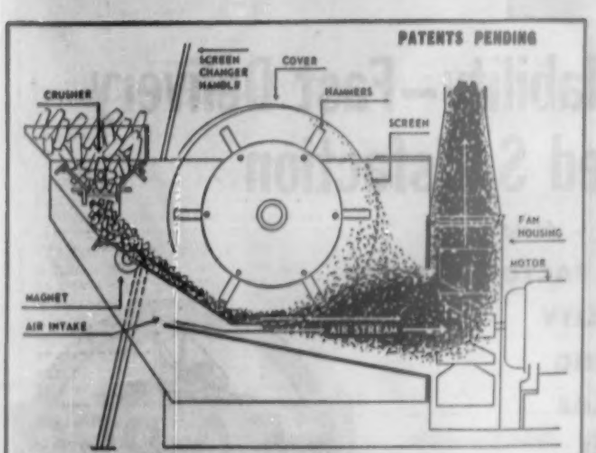


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# CONVENTION CALENDAR

Jan. 6-7—Kansas Seed Dealers Assn.; Hotel Broadview, Wichita, Kansas; sec., O. E. Case, 901 Wiley Bldg., Hutchinson, Kansas.

Jan. 9-10—Kansas State Formula Feed Conference; Kansas State College, Manhattan; chmn., Dr. F. W. Atkeson, Kansas State College, Manhattan, Kansas.

Jan. 15-17—New Mexico Grain & Feed Dealers Assn.; Hilton Hotel, Albuquerque; sec., H. B. Hening, P.O. Box 616, Albuquerque, N.M.

Jan. 16-17—Northwest Retail Feed Assn.; Hotel Nicollet, Minneapolis, Minn.; sec., W. D. Flemming, 112 Grain Exchange Bldg., Minneapolis, Minn.

Jan. 22—Nevada Feed Conference; Univ. of Nev., Reno; chmn., Dr. J. F. Kidwell, U. of Nev., Reno, Nev.

Jan. 22-24—Indiana Grain & Feed Dealers Assn.; Claypool Hotel, Indianapolis; sec., Fred K. Sale, 600 Board of Trade, Indianapolis, Ind.

Jan. 23-25—North Dakota Poultry Industries Convention; Elks Club, Fargo; chmn., Irving J. Mork, North Dakota Agricultural College, Fargo, N.D.

Jan. 23-25 — Southeastern Poultry and Egg Assn.; Municipal Auditorium, Atlanta, Ga.; sec., J. Paul Williams, 615 E. Franklin St., Richmond, Va.

Jan. 26-28—American Dehydrators Assn.; Hotel del Coronado, Coronado, Cal.; exec. V. P., Joseph Chrismar, Dwight Bldg., Kansas City, Mo.

Feb. 3-4—Minnesota Turkey Growers Assn.; Radisson Hotel, Minneapolis; sec., Alfred E. Eisenmenger, 2200 University Ave., St. Paul 14, Minn.

Feb. 7-8 — Hoosier Turkey Trot; Lafayette, Ind.; chmn., David D. Jackson, Ind. Agricultural Extension Service, Lafayette, Ind.

Feb. 7-8—Utah Nutrition and Production Conference; Utah State Agricultural College, Logan; sec., Dr. Lawrence Morris, Animal Husbandry Dept., Brigham Young Univ., Provo, Utah.

Feb. 12-14—Wyoming Grain, Feed and Seed Dealers Assn.; Laramie, Wyo.; sec., Everett L. Berry, Box 118, Sheridan, Wyo.

Feb. 12-14—Grain Processing Machinery Manufacturers Assn.; Edgewater Beach Hotel, Chicago; sec., Raymond J. Walter, 511 Fifth Ave., New York 17, N.Y.

Feb. 17 — Washington State Feed Assn.; Chinook Hotel, Yakima; sec., John G. Wilson, 814 Second Ave. Bldg., Seattle 4, Wash.

Feb. 19-21—Colorado Grain, Milling and Feed Dealers Assn.; Shirley-Savoy Hotel, Denver; sec., R. B. Kelley, 605 Bining Exchange Bldg., Denver, Colo.

Feb. 19-21 — Ohio Grain & Feed Dealers Assn.; Commodore Perry Hotel, Toledo; sec., L. E. Folsom, 222 Chatham Rd., Columbus 14, Ohio.

Feb. 22—Mutual Millers and Feed Dealers Assn.; Hotel Statler, Buffalo, N.Y.; sec., Mrs. G. A. Bentley, 41 Chautauqua Ave., Jamestown, N.Y.

Feb. 23-23 — Virginia Polytechnic Inst. Nutrition School; Hotel Roanoke, Roanoke, Va.; chmn., Paul M. Reaves, V. P. I., Blacksburg, Va.

Feb. 27-28 — Midwest Feed Mfrs. Assn.; Hotel Muehlebach, Kansas City; exec. V. P., Lloyd S. Larson, 20 West Ninth Street Bldg., Kansas City, Mo.

March 7 — Distillers Feed Conference; Sheraton-Gibson Hotel, Cincinnati, Ohio; sec., Lawrence Carpenter, 1232 Enquirer Bldg., Cincinnati 2, Ohio.

March 15-16 — Oregon Feed and Seed Dealers Assn.; Multnomah Hotel, Portland; sec., Leon Jackson, 809 Lewis Bldg., Portland 4, Ore.

March 18-19—Quad-State Convention sponsored by Sioux City Grain, Feed & Seed Assn.; Martin Hotel, Sioux City, Iowa; sec., N. G. Nichols, 901 Missouri River Road, Sioux City, Iowa.

March 18-23—Grain Elevator and Processing Superintendents; Muehlebach Hotel, Kansas City, Mo.; sec., Dean M. Clark, "Grain," Board of Trade, Chicago 4, Ill.

March 22-23—Maryland Nutrition Conference for Feed Mfrs.; Shoreham Hotel, Washington, D.C.; chmn., Dr. G. L. Romoser, U. of Md., College Park, Md.

April 2—Purdue Egg Day; Lafayette, Ind.; chmn., David D. Jackson, Ind. Agricultural Extension Service, Lafayette, Ind.

April 5—Texas Feed Manufacturers, Hotel Texas, Fort Worth; sec., Monroe U. May, P.O. Box 6666, Dallas 19, Texas.

April 6-7 — Texas Grain & Feed


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# U.S.I. FEED NEWS

Vol. II, No. 12 ★ A SERIES FOR SCIENTISTS AND EXECUTIVES OF THE FEED MANUFACTURING INDUSTRY ★ December, 1955


## Lack of Vitamin A Found A Predisposing Factor in Coccidiosis of Chickens

Vitamin A has been found to influence the course of coccidiosis in chickens in three ways, according to a recent report by European scientists. (1) Deficiency of Vitamin A decreases resistance against coccidiosis, as shown by either greater mortality or prolonging of the disease. (2) Amount of Vitamin A contained in the feed and severity of the disease seem to have a direct relation to each other. (3) Vitamin A has some anti-infective action against coccidiosis.

This work points to the need for sufficient supply of Vitamin A in chick rations during the rearing time. Because of its unusual biological activity and storage stability, many feed formulators find U.S.I. PERMADRY a superior source of sealed-in Vitamin A, providing the necessary supplementation of this important growth vitamin.

## Riboflavin Needs of Developing Chick Embryos

Recent scientific reports lend support to the theory that there is a relationship between formation of melanin, a brownish-black pigment in chick down, and riboflavin requirements during embryonic development of chicks. Observations were made on both black and nonblack embryos and on chicks, using dams that were fed a riboflavin-deficient diet.

The researchers suggest that riboflavin may have some influence on the process of melanin pigment formation. It was found that hatchability could be increased, particularly in eggs containing black embryos from Cornish dams, by injecting an aqueous solution of riboflavin into the hatching embryos. Where poor hatchability with black embryos is found, riboflavin content of breeding rations should be checked to be sure minimum requirements are satisfied.

## Foresee New Trends In Feed Formulation for '56

Use of more and more fat in formulated feeds — a trend which has been going on for several years as a result of surpluses of beef tallow, lard and other animal fats — is predicted for 1956 by leading feed trade authorities. This increase in the use of animal fats — brought about in part by new techniques of producing fat in solid form—is also expected to stimulate use of greater quantities of methionine, antibiotics, vitamins and antioxidants in feeds.

### Need for Methionine

Animal fats are very high in energy content, but lack protein. Adding fat to a formulated feed can throw off the protein-energy balance badly if the manufacturer does not add some protein from a concentrated source. In addition, methionine supplementation is necessary to prevent amino acid deficiency. Actually, in the light of modern nutritional theory, *every* broiler feed and dog food should contain added methionine.

Another thing which feed formulators contemplating the use of animal fats must consider is the need for antioxidants to combat the tendency of these fats to oxidize and turn rancid, which causes stress and other nutritional disturbances.

### Other Factors

Such factors as disease and changes of environment subject animals to abnormal stress. The use of high energy rations also brings about a metabolic stress and so may require a greater intake of antibiotics and vitamins. Continuing research points to more and more ways in which antibiotics contribute to the health and efficient growth of animals.

### Action of Antibiotics

One mechanism by which antibiotics may boost growth is through the thinning of intestinal walls, permitting better absorption of vitamins and other nutrients. Another theory postulates that antibiotics also affect hormone secretion, playing a regulatory role in the endocrine system.

There is also a trend to use some grain or molasses fermentation by-products in nearly all broiler growing rations—because of the minerals and unknown growth factors which fermentation solubles contain. U.S.I. offers feed manufacturers a number of fine fermentation products: Vacatone 40, Curbay B-G 80 and B-G 500 — as well as the methionine, antibiotics, and vitamins listed below.

### Worthwhile Reading

Articles on methionine, Vitamin $B_{12}$ and antibiotics in the November issue of *American Feed and Grain*.

## Protein Supplement Vital In Feeding Sows Silage

Farmers can cut costs by self-feeding pregnant sows and gilts — and still prevent their putting on too much weight—according to university scientists. They recommend (1) feeding more bulk and (2) using a concentrate containing high levels of vitamins. The researchers reportedly cut feed costs 20% and more by self-feeding corn silage plus a supplement rich in proteins and minerals to gestating animals. Included in the supplement were very high levels of Vitamin $B_{12}$ and Vitamins A and D. Alert feed manufacturers will watch this trend with the thought of providing hog farmers a vitamin-rich protein supplement for bred sows. For your supply of Vitamins $B_{12}$ and A, call your nearest U.S.I. office.


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MINNEAPOLIS

Dealers Assn., Hotel Texas, Fort Worth; sec., Ben Ferguson, 614 Meacham Bldg., Fort Worth 2, Tex.

April 9-11—American Assn. of Feed Microscopists; Deming Hotel, Terre Haute, Ind.; sec., Robert C. Wornick, Chas. Pfizer & Co., Terre Haute, Ind.

April 12-14—California Hay, Grain & Feed Dealers Assn.; Ambassador Hotel, Los Angeles; sec., John F. Gilmore, 1400 Tenth St., Sacramento 14, Cal.

April 16-17—Nebraska Grain and Feed Dealers Assn.; Hotel Cornhusker, Lincoln; sec., Howard W. Elm, 917 Trust Bldg., Lincoln, Neb.

May 3-5 — Kansas Grain & Feed Dealers Assn.; Kansan Hotel, Topeka; sec., O. E. Case, 901 Wiley Bldg., Hutchinson, Kansas.

May 21-22 — National Cottonseed Products Association; Statler-Hilton Hotel, Dallas; sec., John F. Moloney, 19 S. Cleveland St., Memphis, Tenn.

May 23-25—American Feed Manufacturers Assn.; Morrison Hotel, Chicago; sec., W. T. Diamond, 53 West Jackson Blvd., Chicago 4, Ill.

June 4-5 — Eastern Federation of Feed Merchants; Hotel Commodore, New York; sec., Howard J. Benson, Eastern Federation of Feed Merchants, Sherburne, N.Y.

June 4-5—Georgia Feed & Poultry Conference; Dinkler Plaza Hotel, Atlanta; sec., Will L. Kinard, 208 William-Oliver Bldg., Atlanta 3, Ga.

June 6-9 — Grain Processing Machinery Manufacturers Assn.; French Lick Springs Hotel, French Lick, Indiana; sec., Raymond J. Walter, 511 Fifth Ave., New York 17, N.Y.

June 11-12 — Montana Nutrition Conference; Montana State College, Bozeman; chmn., O. O. Thomas, Montana State College Agricultural Experiment Station, Bozeman, Mont.

June 15—Pacific Northwest Grain Dealers Assn.; Davenport Hotel, Spokane, Wash.; sec., Pete Stallcop, 418 Peyton Bldg., Spokane, Wash.

June 17-19 — Indiana Grain and Feed Dealers Assn.; Purdue Union Bldg., Purdue University, Lafayette, Ind.; sec., Fred E. Sale, 600 Board of Trade Bldg., Indianapolis, Ind.

June 28-30—Association of Southern Feed and Fertilizer Control Officials; Hotel Roanoke, Roanoke, Va.; sec., Bruce Poundstone, U. of Ky. Agricultural Experiment Station, Lexington 29, Ky.

Oct. 4-5—Texas Nutrition Conference; Texas A&M, College Station, Texas; chmn., J. R. Couch, Dept. of Poultry Husbandry, Texas Agricultural & Mechanical College, College Station, Texas.

Oct. 17-18—Assn. of American Feed Control Officials; Shoreham Hotel, Washington, D.C.; sec., L. E. Bopst, U. of Md., College Park, Md.

### NAMED VICE PRESIDENT

TEMPE, ARIZ. — Paul B. Aepli, 205 E. Sixth St., has been named a vice president of the Capital Feed & Seed Co., pioneer Arizona farm supply house. He has been with the firm since 1923. At present he is manager of the Gilbert branch.

Lysander Richmond

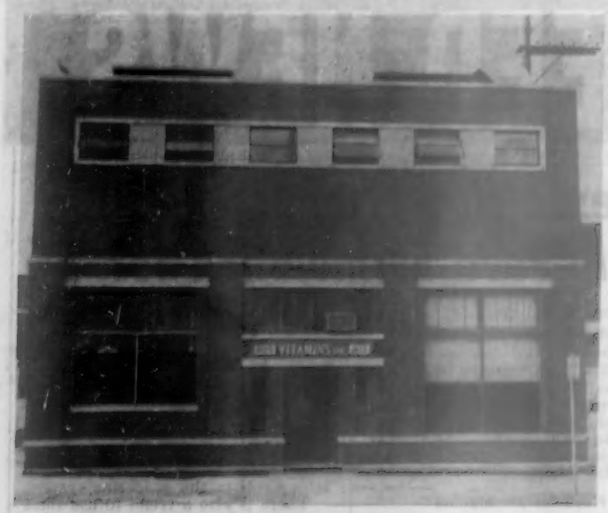
**APPOINTED — Lysander Richmond has joined Arkell & Smiths as a sales representative for the flexible packaging division, it has been announced by Ernie Heath, division sales manager. A graduate of Boston University, Mr. Richmond was for six years a sales representative for the Benjamin C. Betner Co. covering the New England area. With Arkell & Smiths, Mr. Richmond will continue to serve the New England area. He will have headquarters in Boston, Mass.**

## Early Rations Affect Calf Weight Gains

AMES, IOWA — Rations fed to dairy calves during the first eight weeks tend to affect weight gains at least to one year of age, according to Dr. N. L. Jacobson and Dr. R. S. Allen of the Iowa Agricultural Experiment Station. Season of birth, on the other hand, has no appreciable effect on body weight gain.

These are the conclusions the Iowa scientists have drawn from body weight data on 629 dairy calves being used in various nutritional experiments at Iowa State College. The pair found that birth weight differences within breeds affect weight gains to some—but not a great—extent.

Dr. Jacobson and Dr. Allen are directing studies of the early nutrition of dairy calves. Work during the past year included experiments with various levels of different antibiotics and with large doses of vitamin A. They also studied the relationship of rate of growth to blood sugar levels in dairy calves.

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## Poultry Fact Finding Conference Planned

CHICAGO — The initials IAPI of the Institute of American Poultry Industries will be dramatically emphasized in the theme of the 1956 Fact Finding Conference — "Ideas— Action — Progress — Income." This 27th annual business meeting sponsored by the institute will be held in the Municipal Auditorium, Kansas City, Mo., Feb. 10-12.

Dr. Cliff D. Carpenter, institute president, reports that a fact-filled program is in the making. "Conference workshops," he says, "will be loaded with ideas that can be put into action, action that means progress in the poultry industry and results in profitable income."

During the three days there will be five program workshops—presentations of vital developments, new efficiencies, better methods in poultry and egg production, procurement, processing and merchandising and what they mean to individual company operations today and in the future.

The exhibition hall of the auditorium will again house a larger exhibit than has ever been displayed previously. More than 110 companies had reserved space at last report, already approaching the 114 record high in 1955.

A feature of the conference will be the third annual Junior Fact Finding Conference for 4-H and FFA young people. Two groups are cooperating with the IAPI in this event: the National Committee on Boys and Girls Club Work, Inc., and the Federal Extension Service.

Last February 2,785 poultry and egg businessmen attended the conference, a record high. They came from 44 states and a number of foreign countries. Advance hotel reservations, at this point, are reported to be ahead of last year.

Information on the conference may be obtained from the Institute of American Poultry Industries, 221 N. La Salle St., Chicago 1, Ill.

## Combining Livestock Said to Reduce Risk

AMES, IOWA—Economists at the Iowa State College Agricultural Experiment Station have found that a farmer should have about half of his resources in each of poultry and dairy if he wants a livestock farming system which will give him the most stable income. But at the same time, such an enterprise probably won't give him the highest profits in the long run.

The economists found that adding to dairying, poultry or a beef cow herd always increases risk and variation in income, though profits over time are usually increased. Adding a hog enterprise serves to reduce income variation.

Adding a second livestock enterprise to the first has the greatest effect on reducing income variation. Additions of a third or fourth enterprise have lesser effects, they say.

### COLORADO EXPANSION

COLORADO SPRINGS, COLO.—Scott Ferguson, owner of the Mountain View Feed & Grain Co., Colorado Springs, Colo., has opened a new cattle feed pellet plant here. The new building has 9,100 sq. ft. of floor space.

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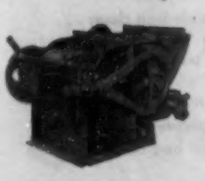

Experience is your best guide, when you select equipment for your feed plant.

Many operators have found by actual experience that Ehrsam machinery and equipment does the job fast and well at minimum expense. Ehrsam's continuous research program assures you of equipment designed to meet modern standards, for the most efficient, low-cost operation.

Ehrsam sales engineers are eager to help you solve your planning and operating problems. Please feel free to call them at any time.

**THE J. B. EHRSAM & SONS MFG. CO.**
ENTERPRISE, KANSAS

A part of the crowd that attended the opening of the new Purina mill at Springdale, Ark., is shown in front of the mill at lunch time.

## 25,000 Attend Opening Of New Purina Mill

SPRINGDALE, ARK.—One of the largest crowds ever to assemble in northwest Arkansas—some 25,000 farmers and friends of the Ralston Purina Co.—gathered at Springdale Nov. 12 for the opening of the new Purina mill there.

Visitors were conducted on tours through the new mill. They were then served a barbecued chicken lunch on the mill grounds. After lunch the visitors were entertained by radio and television star Hank Snow, and other stars of the Grand Ol' Opry and the Ozark Jubilee.

Food for the picnic lunch included 13 tons of chicken—all grown in the Springdale area, 2½ tons of baked beans, 400 gallons of barbecue sauce, 672 loaves of bread, 12,000 half pints of milk, 750 gallons of coffee, a trailer load of potato chips and a truck load of ice cream.

U.S. Rep. J. W. Trimble, from Arkansas' third congressional district, welcomed Purina to the state. Donald Danforth, president of the Ralston Purina Co., told the guests of his company's implicit belief in the future of agriculture in northwest Arkansas, which prompted Purina to locate the new mill at Springdale.

**NEW LOCATION—In its fourth step in a series of continued expansions since founded in 1941, Chemo Puro Manufacturing Corp. is moving its plant and executive offices from Long Island City to an 11-acre site at 148-182 Doremus Ave., Newark, N.J. The move is expected to permit the company to expand its production of its pharmaceutical materials and feed chemicals, such as growth stimulants, vitamins and worming agents. The new plant is located on the Passaic River and has a pier for barge transportation. It has a siding on the New Jersey Central Railroad, is two miles from Newark Airport and is just off the New Jersey Turnpike. Manufacturing facilities at the new site include two buildings with a total of 80,000 sq. ft. and a 20,000 sq. ft. protected outdoor building. There is a tank farm with a storage capacity of 4,000,000 gallons and other storage facilities.**


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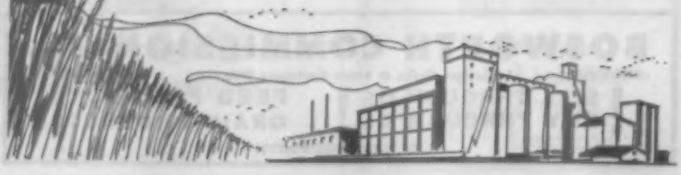

# Scholarship Program for Feed Technology School Described

KANSAS CITY — Details of the feed industry's scholarship program for the feed technology course at Kansas State College were outlined recently by the industry scholarship committee.

The committee, headed by R. E. Wendland, Wendland Grain Co., Temple, Texas, met in connection with the recent dedication of the new feed technology facilities at the college in Manhattan, Kansas.

One of the industry's and college's principal jobs now is to encourage young men to study feed technology at Kansas State, industry leaders and dedication speakers have pointed out. It is expected that the scholarship program will help make it possible for students to take the course.

A number of four-year scholarships have been given to date by firms in the industry, and it is hoped that additional scholarships will become available.

At present, approximately 40 students are taking the feed tech course. Dr. A. D. Weber, dean of agriculture at K-State, commented at a recent meeting in Kansas City that he believed that in five years, the milling industries department should have about 200 students each year in the feed tech course. He expressed confidence that the industry would provide the job opportunities.

For persons or firms or organizations interested in giving scholarships or encouraging prospective students to seek scholarships, the following description of the scholarship program is presented here:

1. Established scholarship to the School of Feed Technology shall be a total of $1,600. This amount is payable to the school for the student at the rate of $400 per year, allocated $200 per semester. All scholarship funds should be paid to the Kansas State College Endowment Assn. Final allotment of the funds to the individual student is to be determined by the college officials not to exceed the above indicated amounts.

2. Scholarships shall be renewable each semester so long as a student continues in the feed milling major and his grades are satisfactory. Continuance of the scholarship shall be subject to the decision of the scholarship committee of Kansas State College, as appointed by president of the School of Feed Technology.

3. The scholarship funds may be used to pay for the fees collected by the school, for books, or for board and room.

4. There shall be no re-payment of scholarship funds for the student if said student leaves the school, changes courses or becomes ineligible for any reason of the continuance of the scholarship.

5. There are three avenues by which scholarships may be established and made available to the donors:

a. The establishment of one or more complete scholarships for the four-year term.

b. The establishment of one or more complete scholarships in conjunction with other companies or persons to make the total of $1,600 for the four years available.

c. The payment of monies into the scholarship endowment association for the purpose of being accumulated into the amounts necessary to provide what is considered to be a worthwhile and adequate scholarship of $400 per year.

6. There shall be no restriction placed as to who (firm or individual) should be permitted to give scholarships.

7. A maximum of five scholarships shall be the limit that any one person or company may provide (annually).

8. Each grant may be accepted in the name of a donor, or donors, if it is their wish for their name to be identified with the gift, and in that event the donors be so listed in college publication.

9. If the donor desires, it shall have the privilege of approving the nominee suggested for its scholarship. Otherwise, the nominee will be at the discretion of the college officials.

10. In the event the donor's gift shall be less than a full scholarship for one year, it is recommended that the identity of the donor shall not be identified with the individual scholarships, unless two or more donors shall by prearrangement contribute sufficient money for one or more scholarships and express their desire to have their names identified with the scholarships.

11. Standards for the nominee for the scholarship shall be set equal to, or higher than, those scholarship requirements made (by or for) other industries or professions.

12. Students seeking scholarship awards must procure or have at least one letter of recommendation from


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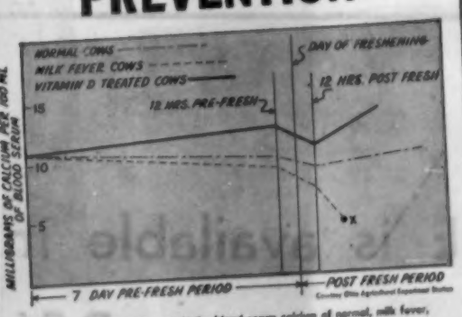


This graph portrays changes in the blood serum calcium of normal, milk fever, and vitamin D-treated cows before and after calving. The heavy line represents cows fed 30 million units of vitamin D per day for 5 to 7 days before freshening. Note high level of blood serum calcium which protects against milk fever. The lower broken line represents low calcium levels found in milk fever cows. At point X milk fever cows lose consciousness.

Has milk fever proved to be a problem among certain cows in your herd? Then this advertisement by Standard Brands will be welcome news for you.

For many years scientists have been experimenting with heavy doses of Fleischmann's Irradiated Dry Yeast to prevent milk fever. These scientists were seeking to learn at what level and for what period of time heavy vitamin D intake would prove most effective and cost the least.

After fifteen years of experiments at the Ohio Agricultural Experiment Station, recommendations can now be made as to the proper level of vitamin D to feed for milk fever prevention. We can also tell you that feeding at this recommended level, each day, for 5 to 7 days before freshening, is comparatively inexpensive.

Remember, the feeding of heavy doses of FIDY is not for the treatment of milk fever — it is used as a *preventive* of milk fever. See your feed dealer or veterinarian.

If you have experienced milk fever losses and your feed dealer or veterinarian is not yet prepared to take care of your needs —write us. They and we can now help you, thanks to advances in dairy science. Address Desk HD-55, STANDARD BRANDS INCORPORATED, *Agricultural Department*, 595 Madison Avenue, New York 22, N. Y.

Fleischmann's F·I·D·Y IRRADIATED DRY YEAST RICH IN VITAMIN D

Now, after 15 years of research at the Ohio Agricultural Experiment Station, Standard Brands can tell this story! The advertisement shown here will appear in the leading dairy journals to acquaint your customers with how to feed for milk fever prevention.

Experiments at the Ohio Agricultural Experiment Station have led to an economical way of feeding heavy doses of FIDY for prevention of milk fever.

This is good news for dairymen—and good news for you—for it means that dairymen can protect their valuable cows at freshening time. You can now offer special formula mixes or FIDY itself to be fed as an aid in the prevention of milk fever.

*Free Portfolio Tells All*

Send now for portfolio giving complete information. Simple instructions for mixing, labeling and feeding are included. It's all there—clear, concise, easy to read. Request your portfolio today on your letterhead. Be ready to serve the dairymen in your community. Address Desk F-105, STANDARD BRANDS INCORPORATED, *Agricultural Department*, 595 Madison Avenue, New York 22, N. Y.

Fleischmann's F·I·D·Y IRRADIATED DRY YEAST RICH IN VITAMIN D FOR FOUR-FOOTED ANIMALS

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a member of the feed industry indicating that the student possesses:

a. Proper interest in the profession;

b. Average or above in aptitude; and

c. Be of good character, acceptable to college officials.

13. Application dates and other necessary details for administering the scholarship shall be made and set by the college authorities.

14. Authorities of Kansas State College will provide application forms for any interested company or person to be used by said firm or person in indicating his interest in providing a scholarship.

## Program Completed For 11th Kansas Feed Conference

MANHATTAN, KANSAS — Program for the 11th Kansas Formula Feed Conference at Kansas State College Jan. 9-10, 1956, was announced recently by Prof. F. W. Atkeson, conference chairman.

The conference normally is attended by 400 to 500 feed dealers, feed manufacturers, county agents and agricultural leaders. It is sponsored by Kansas State College, the Kansas State Board of Agriculture, Topeka; the Kansas Grain & Feed Dealers Assn., Hutchinson; and the Midwest Feed Manufacturers Assn., Kansas City, Mo.

Speakers and their topics for the 1956 conference are: Dr. L. A. Moore, USDA, Washington, "Tomorrow's Rations for Dairy Cows"; Dr. Orville G. Bentley, Ohio State College, "Nutritional Studies with Rumen Microorganisms Using the Artificial Rumen Technique"; Dr. G. F. Combs, University of Maryland, "Feeding Laying and Breeder Chickens and Turkeys"; Dr. J. L. Krider, vice president, McMillen Feed Mills, Fort Wayne, Ind., "New Developments in Swine Nutrition"; Prof. Ralph Soule, Jr., K-State, "Factors Affecting Carcass Quality of Market Pigs"; Dr. Draytford Richardson, K-State, "Present Status of Feeding Stilbestrol to Beef Cattle"; Dr. Harold L. Wilcke, assistant director of research, Ralston Purina Co., St. Louis, "Feeding and Management of Cage Layers"; Dr. Moore, "Vitamins in Dairy Cattle Nutrition."

Other speakers and their talks are as follows: Dr. Combs, "Protein and Amino Acid Requirements Influenced by Energy Level"; Dr. F. C. Fountaine, K-State, "The Effect of Urea on the Digestibility of Rations by Dairy Cattle"; Dr. Bentley, "Supplements for Poor Grade Roughages When Fed to Beef Cattle"; Dr. Paul E. Sanford, "Effects of Kinds of Rations on Carcass Quality in Poultry"; and Dr. Morris Erdheim, staff veterinarian and director of technical developments, Dawe's Laboratories, Inc., Chicago, "Veterinary Aspects of the Feed Industry."

Joseph Burger, vice president and sales manager of Corneli Seed Co., St. Louis, will speak at the annual banquet where Prof. Atkeson and Dr. D. B. Parrish, of the K-State chemistry department will conduct a question-answer roundup on feeds and feeding problems.

Conducting the various sessions will be John Monaghan, Topeka, director of the control division of the Kansas State Board of Agriculture; Elmer Winterscheidt, Seneca, president of the Midwest Feed Manufacturers' Assn.; Lloyd S. Larson, MFMA executive vice president, and O. E. Case, secretary-treasurer of the Kansas Grain & Feed Dealers Assn.

Mr. Larson will conduct a radio program of interviews of conference officials. Maurice Johnson, vice president of the Staley Milling Co., Kansas City, Mo., will lead a panel discussion of feed dealers and manufacturers concerning their mutual problems.


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# Scientists Study Nutritional Relationships Of Climates, Soils, Plants and Animals

**From AGRICULTURAL RESEARCH**
**Publication of the U.S. Department of Agriculture**

In his quest for more food, man will have to think not only of high yields but also of soil management that returns nutritionally richer crops.

That's the conclusion of Director K. C. Beeson and his staff at the U.S. Department of Agriculture's Plant, Soil, & Nutrition Laboratory, Ithaca, N.Y., after 15 years of studying the basic nutritional relationships among animals, plants, soils and climates. Though research has shed a little light, we're still in the dark ages on these matters.

Here are some significant facts:

Test animals grow differently on seemingly identical turnipgreens from soils in two Georgia locations.

Lambs grow poorly on soybean hay from low-phosphorus soils but respond to a phosphorus supplement.

Calves develop a goiter-like growth and won't gain on over-fertilized timothy hay in New Hampshire.

Cattle are unthrifty on forage from low-cobalt soils in North Carolina but thrive if fed mineral cobalt.

A few studies show the variety of factors that can affect the quality of food and feed plants. For example, the laboratory found some years ago that the amount of vitamin C in tomatoes depends on where they're grown. Soil differences were considered, but intensity of sunlight at ripening stage proved the principal cause.

Potatoes also differ widely in vitamin C, but the laboratory found that this is a genetic difference. The Agricultural Research Service is now breeding high-vitamin-C varieties.

Then there is the soil factor. For several years the experiment stations of Georgia, North Carolina, Mississippi, Oklahoma, Texas and Puerto Rico have been cooperatively studying quality variation in turnipgreens. They're important in many southern diets, and especially so to provide vitamin C for families using little milk or citrus fruit. The Ithaca laboratory joined in the study, using laboratory animals as a yardstick.

Louise Gray, ARS nutritionist, and associates, working in cooperation with the Georgia station, found that rats grow much better on turnipgreens from Blairsville, Ga., than on turnipgreens from Experiment, Ga., in another part of the state. Vitamin C didn't vary much—but the better greens contained a vitamin-$B_{12}$-like substance of which the poorer greens had little or none.

That's the first discovery of this nutrient or its precursor in plants. Its presence was proven with an organism that requires vitamin $B_{12}$, Ochromonos leichmonii. This grew on the better greens—also on the livers of $B_{12}$ starved chicks fed exclusively on the better greens. But the organism wouldn't grow on the poor greens.

Adding major and minor mineral nutrients to the Experiment, Ga., diet didn't help, but adding $B_{12}$ restored full growth. We need to learn how to make plants a dependable source of this vitamin, the researchers say. Since bacteria build $B_{12}$, the researchers are looking to soil microflora, soil organic matter, and soil minerals — especially cobalt, a constituent of $B_{12}$—for an explanation. Soils in the area around Experiment, Ga., are deficient in cobalt.

Earlier ARS—North Carolina station research has shown that sheep and cattle are unthrifty when dependent on forage from a low-cobalt soil. This can be corrected by adding a trace of cobalt sulfate to soil or diet.

Another problem is the matter of toxic feeds. E. J. Thacker, G. H. Ellis, L. J. Daniel, G. D. Duncan and Miss Gray have traced so-called zinc and molybdenum poisoning from retarded metabolism in animals back to mineral excesses in the soil on which their feed grew.

Excessive zinc in crop soils harms animal consumers of the crops in two

(Continued on page 76)


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**New Literature**

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## No. 5353—Fire Alarm System

The Seedburo Equipment Co. announces a new fire alarm system which is recognized by the Mill Mutual Fire Prevention Bureau. The system, called by the trade name, the Secoalarm, utilizes a sensitive thermostat and is designed principally for elevator legs and cupola protection in country elevators and feed and seed houses. The unit can be installed by any competent electrician or by any good mechanic if a competent electrician is not available, unless local ordinances or codes require otherwise, the company states. It has an audibility range of approximately one quarter mile. Additional information may be obtained by checking No. 5353 on the coupon and mailing it to Feedstuffs.

## No. 5354—Animal Fat Handling

The Wenger Mixer Manufacturing Co. has published a new booklet covering suggestions for the installation of animal fat handling and mixing systems in feed mills. The booklet has suggestions covering the installation of animal fat bulk handling systems, pumping fats from fats storage tanks, fat lines from storage tanks through pumps to fat preheaters or packaged unit mixers, means of mixing animal fats in mixed feeds, the application of animal fats to the pellet mashes in the pellet mill and the application of animal fats in batch mixers. Secure the booklet without charge by checking No. 5354 on the coupon and mailing it to Feedstuffs.

## No. 5355—Test Diets

General Biochemicals, Inc., is offering a new bulletin entitled "Biological Test Diets" listing a wide range of prepared diets for the feeding of experimental animals. This little handbook is announced as a ready reference for nutritional investigators engaged in biological research. Complete formula information and prices are given on a wide range of ready-to-use test diets. Various vitamin, mineral, carbohydrate and protein deficient diets are described. Carcinogenic diets are also included. This new 36-page booklet is sent free upon request. Secure it by checking No. 5355 on the coupon and mailing it to Feedstuffs.

## No. 5356—Automatic Brooder

Kerostat is the trade name of a newly designed automatic oil brooder featuring twin burners, it has been announced by the Makomb Steel Products Division, Globe American Corp. One burner may be turned out during moderate weather, company officials state. When heating power is needed, the two burners will develop 21,000 BTU hourly input, it is claimed. Other features, according to the company are: Vertical hanging extender skirts which can be extended to increase canopy size from 63 in. to 72 in.; extension of the expander skirts provides greater chick capacity and comfort plus more heat for the feeding and watering areas; a new, UL approved constant level valve provides a single automatic control adjustment for both burners and insures a constantly safe fuel level in vaporizer bowls and the canopy top has fiberglas insulation for improved heat retention and quick, uniform distribution. Secure more complete details by checking No. 5356 on the coupon and mailing it to Feedstuffs.

## No. 5357—Hammer Mill

The Prater Pulverizer Co. has announced the production of a new hammer mill, called by the trade name Prater Dual-Power Advance custom mill. Using a heavy duty motor directly connected to the company's Blue Streak blower, in addition to the usual power connected to the Blue Streak Advance custom mill, company officials state that the additional motor permits the power conveying of grains and other ingredients in any direction. The extra power permits a heavier load to be handled by the custom mill, it is claimed. The unit is available for immediate delivery. Secure more complete details by checking No. 5357 on the coupon and mailing it.

## *Also Available*

The following new products have been described in previous issues of Feedstuffs and information about them may still be obtained by jotting the appropriate number on the coupon and forwarding it to Feedstuffs.

**No. 5309**—Accounts receivable plan, Remington Rand.

**No. 5310**—Hammermill, Duplex Mill & Manufacturing Co.

**No. 5311**—Automatic seed treater, Panogen, Inc.

**No. 5312**—Chronic respiratory disease product, Dr. Salsbury's Laboratories.

**No. 5313**—Liquid vitamin A palmitate for adqueous dispersions, Chas. Pfizer & Co., Inc.

**No. 5315**—Bulk feed body, Helm Manufacturing Co.

**No. 5316**—Torula yeast for feeds, Red Star Yeast & Products Co.

**No. 5317**—Feed mixer, Wenger Mixer Mfg. Co.

**No. 5320**—Salt drum promotion, International Salt Co.

**No. 5322**—Calf creep feeder, Brower Manufacturing Co.

**No. 5323**—Grain and roughage storage unit, A. O. Smith Corp.

**No. 5325**—52-ft. tubular grain elevator, West Fargo Manufacturing Co.

**No. 5326**—Feed aroma enhancer for use in pig starter formulas, Dodge & Olcott, Inc.

**No. 5327**—Vertical feed mixer in three sizes, Fort Worth Steel & Machinery Co.

**No. 5328**—Pressure sensitive tape for patching multiwall bags, Behr-Manning Division, Norton Co.

**No. 5329**—Folder on portable formula feed blender, Barnard & Leas Manufacturing Co.

**No. 5330**—Plastic base material to coat boxcars, J. W. Mortell Co.

**No. 5331**—Hanging feeder for poultry and turkeys, Rhinehart Manufacturing Co.

**No. 5332**—Chart on protein balancing with methionine in broiler rations, Specifide, Inc.

**No. 5334**—Corn sheller, Bryant Engineering Co.

**No. 5333**—Feedstuffs energy values booklet, Limestone Products Corporation of America.

**No. 5335**—Premix for cattle fattener feeds, Poul-An Laboratories, Inc.

**No. 5336**—Packaging and application of poultry medicinals, Vineland Poultry Laboratories.

**No. 5337**—Bulk-bag feed body, Baughman Manufacturing Co.

**No. 5338**—Poultry feeder units, Brower Manufacturing Co.

**No. 5339**—Molasses mixer, Fort Worth Steel & Machinery Co.

**No. 5340**—Mastitis treatment, Dr. LeGear Medicine Co.

**No. 5341**—Seed treater, Panogen, Inc.

**No. 5342**—Stationary feed manufacturing units, Daffin Manufacturing Co.

**No. 5343**—Livestock minerals booklet, Barton Salt Co.

**No. 5344**—Bulletin for processing operations, Fuller Co., subsidiary of Hershey Machine & Foundry Co.

**No. 5345**—Rotary Airlock feeder, Prater Pulverizer Co.

**No. 5346**—Straddle carrier, Ross Carrier Division of Clark Equipment Co.

**No. 5347**—Flock record chart, American Scientific Laboratories.

**No. 5348**—List of special days—50¢ a copy, order from Domestic Distribution Dept., Chamber of Commerce of the U.S., 1615 H St., N.W., Washington 6, D.C.

**No. 5349**—Feeder for starting pigs, Farmer Feeder Co.

**No. 5350**—Hopper magnet, H. C. Davis Mill Machinery Co.

**No. 5351**—Hog wormer, Pemco Products, Inc.

**No. 5352**—Egg grader, National Poultry Equipment Co.

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- ☐ No. 5355—Test Diets
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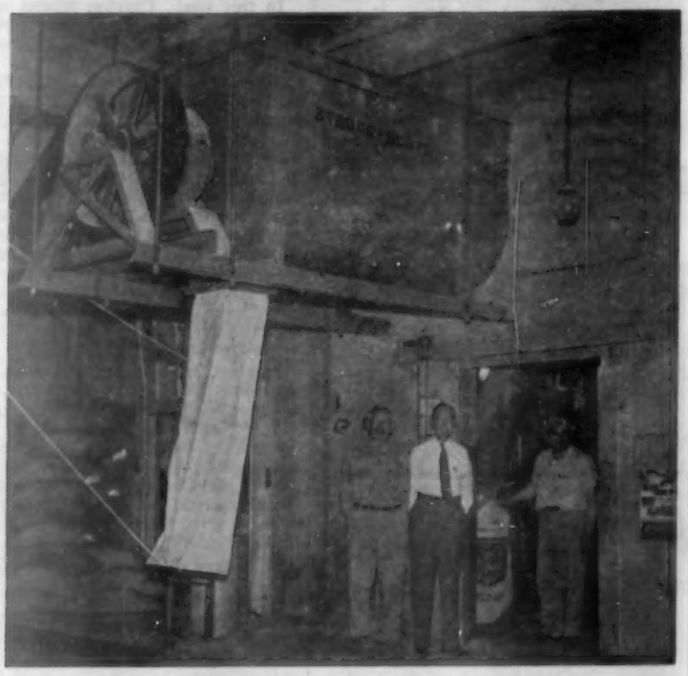
## NEW PRODUCT NEWS



Triple Action Mixer with dual discharge installed at Glencoe, Minn.

## Strong-Scott's Triple-Action Mixer Rated First Choice By Veteran Feed Men

Field reports from veteran feed men all over the country rate the Strong-Scott Triple Action Mixer best for thoroughness, efficiency and economy—wherever feed is mixed in batches. The mixer is available in sizes 24" x 4' to 54" x 16'. As illustrated above, versatility of discharge options is one of the Triple Action Mixer's features. Its many options in feeding and discharge styles solve most installation problems.

The Glencoe installation shown above is a 44" x 12' mixer. One end extends over the platform for bulk truck loading while the other is inside the building for sacking. Dual purpose work is easy because of the Triple Action's reverse switch arrangement.

**A "Triple Mixing" Action**

The Strong-Scott Triple Action Mixer is the only mixer with the exclusive "Triple Mixing" Action.

With this action the center spiral flight keeps the center core of the feed moving while the inner and outer ribbons, conveying and blending in opposite directions, prevent any part of the batch escaping a thorough mix with all other portions. This is the "Triple Mixing Action."

### Strong-Scott's "Big Twin" Handles Huge Capacity of Bulky Ingredients

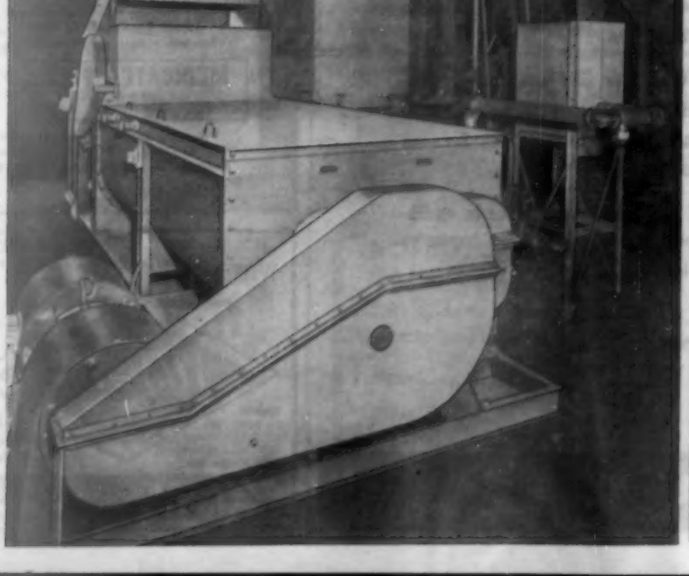
Strong-Scott's "Big Twin" is a slow speed high-capacity molasses mixer that easily accommodates 24 tons of light, bulky material in just one hour. It easily handles a 45% to 50% molasses application by weight. Its slow speed (71 RPM compared to the 1150 RPM of standard mixers) subjects the ingredients to a "gentle mixing" rather than a high speed beating. With this huge capacity, the feed manufacturer can use bulky ingredients of a low specific gravity such as alfalfa meal or beet pulp and still achieve the high output he desires.

**Gentle Mixing Action**

The mixer's gentle mixing action helps preserve the visual identity of such ingredients as rolled grains in the finished product.

Write for complete information.

Illustrated directly below is the Strong-Scott "Big Twin" Molasses Feed Mixer which easily accommodates 24 tons of light, bulky material in just one hour.



# Strong-Scott's New Feed Mixers Can Handle Any Ingredient—Any Mixing Job You Want

To overcome the problems associated with the increased use of formula feeds, Strong-Scott is in the midst of a broad program of research and new product development. A program that is designed to enable the feed manufacturer to produce the high quality products he desires to sell. The program already has resulted in feed mixing machines (such as those illustrated here) that have helped feed manufacturers keep pace with their rapidly growing market.

**Reports from the Field**

Field reports from plant and mill managers all over the country indicate that Strong-Scott equipment is outperforming and outlasting others. Installations running 6 days a week, 18 to 24 hours a day, are showing that the new Strong-Scott Feed Mixers are producing higher volumes with less operating expense.

**Highly Versatile**

Feed manufacturers are hailing the versatile performance of Strong-Scott Feed Mixers. But even more remarkable is the versatility shown through unique installations for more efficient operations.

**Free Information**

Your Strong-Scott sales engineer will be happy to discuss your production problems with you. If you would like complete information about any feed mixer discussed here drop a card to the Strong-Scott plant in Minneapolis.

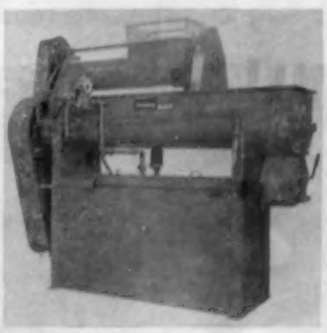
### Strong-Scott Uni-Blend Three Machines in One

The Strong-Scott Uni-Blend Feed Mixer consists of three distinctively different machines blended into one compact working system. A dry mix feeder, a liquid supply, applying and regulating system, and a twin rotor mixer. All three are mounted on the same frame and work together as one system. All are driven by the same motor. A dry feeder controls the feed input; a liquid applying and regulating system accurately supplies the liquid ingredient; the mixer thoroughly blends the two to obtain the finished product. It's all automatic.

Actual field tests prove that the Strong-Scott Uni-Blend Feed Mixer can accurately apply molasses, animal fats or fish solubles to any desired material . . . at a higher capacity on less power than any other mixer on the market.

One of the convenient new features of the Uni-Blend is the customer service tap which allows the operator to draw off small, metered quantities of molasses for resale to customers.

A three-way valve is provided in the liquid line between the meter and the spray nozzles. Under normal operation, the molasses after being metered, flows to the spray nozzles.



Uni-Blend Model No. 181 installed at the Feed & Supply Center, Twin Falls, Idaho.

### Strong-Scott Mixer Delivers High Capacity; Maintains Thorough Mix

Efficient molasses absorption and thoroughness of mix are the big features of Strong-Scott's versatile No. 1 and No. 2 Molasses Mixers. The No. 1 is capable of producing 4 to 7 tons of finished feed per hour while the No. 2 can produce 8 to 12 tons in the same time. Both sizes have double baggers—both deliver a finished product that is free from cakes and molasses balls. The agitator in the mixing chamber of the No. 1 and No. 2 mixers operates at about 1150 RPM. The high speed of the mixing paddles not only thoroughly agitates the mixture but actually drives the molasses into the feed.

Directly below is an installation shot of the Strong-Scott No. 1 Molasses Feed Mixer at Elkader, Iowa. Tons of Folco Feed are mixed here daily.

**The STRONG-SCOTT Mfg. Co.**
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## SCIENTISTS

(Continued from page 73)

ways. For one thing, extra zinc gets into the crop at the expense of copper, since the two minerals compete to nourish the plant (Agr. Res., Dec. 1954, p. 6). Rats on a copper-deficient diet couldn't make enough of two important copper-bearing enzymes, ascorbic acid oxydase (forerunner to vitamin C) and tyrosinase (a tool in body use of inhaled oxygen). In the second place, excess zinc in the diet causes anemia — interferes directly with the rats' manufacture of another important enzyme, cytochrome oxydase, which helps use copper to make hemoglobin (red substance of the blood).

Poisoning from feeds grown on high-molybdenum soil, on the other hand, is an obstruction to body use of the important amino acid methionine. Such a diet stunted rats, but not when methionine was fed too. A copper supplement also mysteriously helped some, but only when the methionine wasn't supplied as an antidote.

Plants need a trace of molybdenum —also manganese—but too much of either poisons livestock. At Ithaca, J. F. Thompson found that plants use molybdenum to reduce nitrates, as generally believed, but contrary to opinion, don't necessarily use manganese that way. He wants to know how a plant uses these and other elements—whether for making chlorophyll or any amino acids.

So the study of amino acids in plants might reveal what the plant does with its soil-derived minerals.

Dr. Thompson found the amount of a mineral in the soil has little relation to the amount of amino acids formed in proteins in the plant, but a close relation to buildup of specific non-protein amino acids. This may lead to a new soil test by paper chromatography that simply, quickly and inexpensively shows amino-acid content of plants growing on the soil. Any deficient ones might point to the mineral lacking in plant and soil.

How does the mineral selenium cause stock poisoning? Dr. Thompson found that plants tend to use it in place of its chemical relative, sulfur, in making methionine. That, in turn, is used in making an essential amino acid, cysteine. Without sulfur, plants make a cysteine-like amino acid that doesn't satisfy an animal's sulfur need. So selenium poisons by causing sulfur hunger.

In this work, Clayton Morris and Dr. Thompson discovered an unknown amino acid—methyl cysteine sulfoxide —in turnipgreens. Quite similar to methionine, it also contains sulfur. To find whether animals can use the new compound instead of methionine in making cysteine, he'll apply it to liver (the organ that builds cysteine) and culture the liver with the cysteine-dependent bacterium Leuconostoc mesenteroides. Bacterial growth would prove that cysteine had been produced. Dr. Thompson will also check the new amino acid as a possible antidote for molybdenum "poisoning"—in other words, as a means of getting around the faulty methionine-cysteine dependency.

Not all animal nutrition diseases are linked to trace minerals (those occurring at less than 20 lb. per acre-foot of soil). Take phosphorus. G. Matrone, formerly with the laboratory, worked on phosphorus with the New York (Cornell) and North Carolina stations. He found low-phosphorus soils yield nutritionally inferior legumes. Lambs gained little or none on hays from such soils—only a half to two thirds as much on soybean hay from the latter state. Rabbits fed such hay developed weak bones. Phosphorus supplement solved the problem, especially when supplied through soil and crop.

Curious as to the best rate for fertilization, dairy husbandman H. A. Keener, of the New Hampshire station, fertilized a timothy crop near Durham very heavily and fed the hay to three-month old calves. The calves formed a goiter-like enlargement of the thyroid and failed to gain normally until other hay was substituted. Mr. Thacker got similar results with rabbits fed this hay. Even supplementing with the known mineral constituents of alfalfa, or alfalfa ash with the inferior timothy brought about normal growth. Why? Mr. Thacker thinks phosphorus in the timothy planting may be a factor—doubts that current tests will show any connection with iodine.

It has been suggested that adding organic matter to low-humus soils improves nutriitonal quality of crops. C. S. Brandt and Dr. Beeson found that has little effect.

Now that researchers are beginning to understand some basic nutritional principles better, it's only a matter of time until scientists turn these discoveries to farm use.

While pressing the search for even more basic knowledge of the soil-plant-animal nutrient relationships, ARS scientists have started mapping minerally abnormal soils in the U.S.

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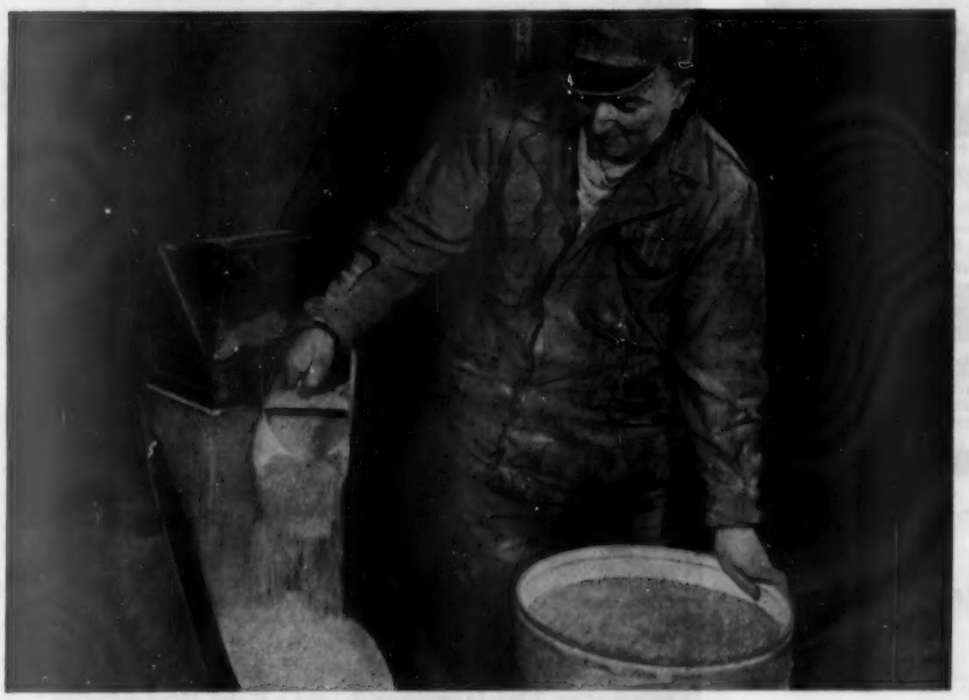

Any one of them is a clinching argument in favor of using Micratized® Vitamins A & D to supplement your feeds. But when you realize that you can have *all four* advantages in this single product, you begin to see why the vast majority of quality feed manufacturers have already standardized on Micratized.

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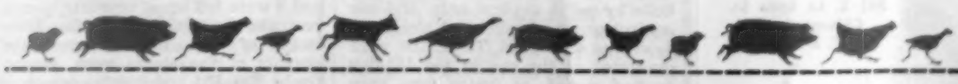

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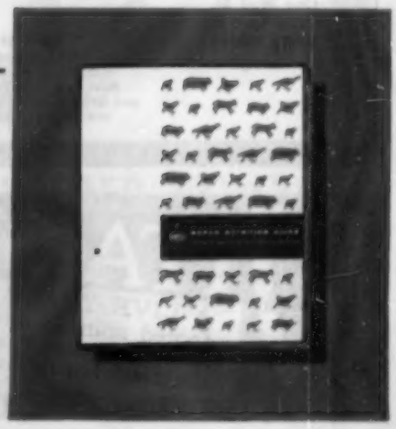

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William T. Brady — John R. Rhamstine — William H. Gamble

**PROMOTIONS—The elections of John R. Rhamstine as executive vice president, William T. Brady as first vice president and William H. Gamble as senior vice president were announced recently by Dr. Ernest W. Reid, president of Corn Products Refining Co., New York. Mr. Rhamstine, who is financial vice president of the company and a director, began his career with the firm in 1934 and served as manager of the Pekin, Ill., plant prior to his appointment as a vice president in 1947. Mr. Brady joined the company in 1919 and served as an executive in the manufacturing departments, both foreign and domestic, until 1945 when he became assistant to the president. In 1948 he was elected vice president in charge of manufacturing and became a member of the board. Mr. Gamble, president of Corn Products Sales Co., began his service with the company in 1910. He was appointed western sales manager in 1924 and general sales manager in 1947. He has been a vice president and director of Corn Products Refining Co. since 1948.**

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## NEW RESEARCH FINDINGS

(Continued from page 11)

lambs fed 0, 2 and 4 mg. of stilbestrol daily had digestibilities of the dry matter of the ration of 69.8, 73.5 and 77.7%, respectively. While the digestibility increased, nitrogen retention increased even more with increasing levels of stilbestrol intake.

The feeding of Aureomycin (21.6 mg. daily) and a combination of Aureomycin and stilbestrol (2 mg. per lamb daily) to lambs at the University of Minnesota was found to slightly increase carcass grades. However, these two treatments and stilbestrol alone failed to significantly affect the rate of gain, efficiency of gain or feed consumption.

**Beef cattle**—Ohio researchers shed new light on the feeding of stilbestrol to cattle. They found that the growth stimulating effect of stilbestrol was affected by the protein level in the ration. This was true whether the hormone was fed or injected as a pellet subcutaneously in the ear. The response in daily rate of gain from stilbestrol was 0.51, 0.36 and 0.03 lb. when 1.5 lb., 0.75 lb. and no soybean oil meal, respectively, was fed per head daily. The price of the steers which should have been paid, based on carcass data shows that stilbestrol treated steers brought 50¢ cwt. less than control steers. The feeding of protein increased the market value of the cattle about $1 cwt. over the steers receiving no protein supplement.

The effects of stilbestrol administration on carcass composition of fattening steers and bulls were reported by V. R. Cahil, L. E. Kunkle and E. W. Klosterman of Ohio State University. Stilbestrol was administered to steers by pellet implant and orally (10 mg. per day), and to bulls by pellet implant only, and one control group of bulls and steers received no stilbestrol. The cattle were marketed at the end of the 184-day feeding period, at which time they were approximately 15 to 18 months of age. Carcass evaluation showed that stilbestrol implantation of bulls tended to enhance fat deposition and raise the carcass grade as compared with untreated bulls, and in steers stilbestrol implantation increased the per cent of chuck, round and loin, and increased the area of the rib eye muscle while per cent of flank and size of the kidney knob were decreased. The observation of raised tailheads in implanted animals was supported by carcass measurements. In contrast, the oral administration of stilbestrol had little effect on carcass composition, and it was reported that meat tenderness was not affected by stilbestrol administration.

T. W. Perry of Purdue University reported that the Purdue group of researchers had found that 450 lb. calves (steers and heifers) fed a fattening ration for 179 days responded differently to various hormone treatments. The control, no hormone lot gained at the rate of 2.10 lb. daily, the steers in a lot fed 10 mg. stilbestrol daily made average daily gains of 2.50 lb., steers in the lot fed 10 mg. dienestrol gained 2.32 lb. daily, and a lot fed 10 mg. hexestrol made daily gains of 2.27 lb. Yearling steers fed a fattening ration for 179 days had the following daily growth rates: no hormone, 2.35 lb.; 10 mg. stilbestrol 2.63 lb.; 5 mg. stilbestrol, and 50 mg. testosterone, 2.62 lb.; 175 mg. testosterone, 2.44 lb. In general, the hormone treatments lowered grade of the cattle and increased the marketing shrink. However, the hormone treatments resulted in a greater dressing percentage to offset the greater marketing shrink. A chemical analysis of the carcasses showed that the stilbestrol-fed steers contained more protein and water and less fat than did the control, no hormone steers.

**Fed to Constant Weight**

G. E. Mitchell and associates of the Illinois Agricultural Experiment Station conducted an experiment with Hereford steers to determine their performance with and without stilbestrol when fed to a constant weight and when fed equal amounts of total concentrates. Lot 1 did not receive stilbestrol. Ten mg. daily was fed to the steers in Lots 2 and 3. The steers in Lots 1 and 2 were fed to an average weight of about 1,100 lb. Lots 1 and 3 were fed equal amounts of concentrate during about the same length of time. The average initial weights of the steers were, respectively, 859, 854 and 849 lb.; length of feeding 124, 96, and 125 days; final weights 1,106, 1,100 and 1,141 lb.; daily gains 1.99, 2.56 and 2.34 lb.; concentrates per cwt. of gain 846, 665 and 719 lb.; feed costs per cwt. gain $26.39, $21.29 and $22.63. The shrinkage to market, live grades and dressing percentages were essentially the same for all lots. The only side effect observed from the stilbestrol was enlarged teats.

It is evident from this experiment that the feeding of stilbestrol to fattening steers was profitable and that there was an advantage and certainly not a penalty from marketing the stilbestrol fed cattle at a constant

weight even though these cattle achieved this weight some four weeks ahead of the cattle not receiving stilbestrol. This is somewhat contrary to the usual recommendations on the feeding of stilbestrol to fattening cattle.

In a test designed to study the effect of stilbestrol and Terramycin alone and in combination on fattening 743-lb. steers, Chas. Pfizer & Co., Inc., researchers obtained the following responses: control — 2.25 lb. daily gain, and 11.3 lb. feed per lb. gain; Terramycin at 10 gm. per ton of feed —2.47 lb. daily gain and 10.8 lb. feed per pound gain; stilbestrol at 10 mg. per steer daily—2.47 lb. daily gain and 9.8 lb. of feed per lb. gain; stilbestrol and Terramycin—2.94 lb. daily gain and 9.1 lb. of feed per pound of gain. Heavier cattle were used in a second test with the same experimental treatments. Similar results were obtained in the second test. In the first test the control lot had the highest carcass grade while in the second test the lot fed the combination of stilbestrol and Terramycin had the highest carcass grade.

It was reported by R. L. Preston of Iowa State College and by C. W. Turner of Missouri University that cattle fed 10 mg. of stilbestrol daily did not have any significant amount of residual stilbestrol in the edible portion of the carcass. Both groups of research workers, using different assay techniques, found their tests to be accurate enough to measure 2 parts per billion of the hormone activity. Turner reported that milk produced by pregnant dairy cows had about 2 times more estrogenic activity as did the edible tissues from cattle fed 10 mg. stilbestrol daily.

**Swine** — Research conducted by Iowa State scientists and reported by Bruce Taylor showed that stilbestrol fed to swine had no significant effect on the rate or efficiency of gain. The pigs used in this test weighed about 33 lb. at the start of the test and were carried on test to market weights. Levels of stilbestrol tested were 0, 5, 10, 20, 40, 80, 160, 320, 640, and 1280 mcg. per pound of ration. Stilbestrol feeding to gilts and barrows definitely resulted in some sexual side effects. The stilbestrol-fed gilts had large vulvas and teats, heavier reproductive tracts and larger cervixes. Barrows receiving the hormone substance had larger rudimentary teats.

In summarizing this hormone research, it appeared that hormones should not be fed to lambs and swine, and possibly not injected in lambs until more research is done. In contrast to cattle feeding, the feeding of stilbestrol to lambs usually results in lowered carcass grades and some undesirable side effects, it was noted.

Gains and feed efficiency are usually increased when stilbestrol is fed to fattening cattle. However, in order to obtain the greatest benefit from stilbestrol it is necessary to have adequate protein in the ration. In addition, the minerals and other fortification should be adequate if the greatest response from stilbestrol is to be had.

Stilbestrol usually does not increase the carcass grade of cattle and in some cases will lower it slightly, it was noted. It would seem that in most cases less fat but more water and protein are deposited in the carcasses of stilbestrol fed cattle.

### WISCONSIN TRANSACTION

WALES, WIS.—The former Feed Supplies, Inc., here has been purchased by Bob Pett and Willard Allen. The firm's new name will be the Dairy Belt Feed & Seed Co. Mr. Pett, manager under the previous ownership, will continue in that capacity.

## *Corn and Supplement Program Most Profitable for Feed Dealer, Hog Man*

Feed dealers in the Corn Belt are generally quite familiar with the type of hog feeder who wants to feed his corn and cut down on supplements in what the feeder presumes is a way of cutting production costs.

A recent issue of Feed & Feeding Digest, prepared by E. G. Cherbonnier, Grain & Feed Dealers National Assn. consultant, tells in narrative form why a corn and supplement program is more profitable than feeding corn alone. The article is entitled, "A Good Swap." This is the article:

Farmer Jones says, "Tell with supplements, hogs are too cheap. I'm feedin' straight corn!"

So he loads up a truck with 24 bu. of corn and takes it to Bright's Feed Store for grinding.

But Bright isn't a sack rider. He always says, whenever a load of grain comes in, "What are you going to feed it to?"

"Hawgs."

"Shall I put some supplement in?"

"Hell, no, hawgs are too cheap."

"Would you like to have me pay you about $8 or $9 to help you make cheaper pork out of this load?"

"Quit your kiddin'."

"I'm serious. That 24 bu. of corn fed alone, will make 200 lb. of pork. Righto?"

"Guess so."

"But 11 bu. of corn and 100 lb. of a good supplement will make 200 lb. of pork. You've done it yourself."

"So what?"

"I'll buy 13 bu. of your corn at $1.10 or $14.30. The sack of supplement will be $5.70. So you get $8.60 and take home just as much potential pork as you brought in. And the grinding and mixing charge will be less, too."

"Let's go over that again."

They do and Bright sells him, making a profit for his customer and himself. Figure it out for your area's corn and supplement prices.


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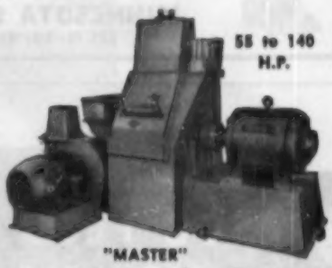

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*Serving the Feed Trade For Over 20 Years*

# Interest Rate Changed for CCC Loans

WASHINGTON—In order to encourage private lending agencies to retain their investment of private funds in Commodity Credit Corp. commodity loans, thus relieving the U.S. Treasury as much as possible of a financial burden which would have to be taken care of through public borrowing, the U.S. Department of Agriculture announced this week that the rate of interest payable to lending agencies which are financing CCC price support loans on 1955 crops and 1954 reseal purchase agreement loans is being increased by one fourth of 1% per year, effective from Dec. 1, 1955. This increase is being offered to bring this interest rate in line with recent increases in rates on short term government and commercial borrowings.

This action will not result in any additional costs to farmers, the USDA explains. The rate of interest charged farmers obtaining price support loans on their commodities will remain at the present rate of 3½% per year.

Lending agencies which have funds invested in CCC commodity loans as of Dec. 1, 1955, or invest their funds in such loans after Dec. 1 will receive compensation at the rate of 2½% for interest, effective from that date, plus the fees for services now provided in the lending agency agreements, compared to the present rate of 2¼%.

In the case of loans on grain and related commodities, where the lending agency agreement provides a single rate of compensation to cover both interest and services, this will mean that the over-all rate of compensation will be increased from 2¾% to 3%. These increases will be effective from Dec. 1, 1955, and will not be retroactive.

Peanut lending agencies will continue to receive service fees at the present rate in addition to interest, and cotton lending agencies will continue to receive the 8¢ bale fee to cover costs of disbursing and scheduling loans.

The increase in interest is being offered by public notices published in the Federal Register, USDA says. Notice will also be given to interested banks.

In order to reduce CCC borrowings from the U.S. Treasury, CCC expects to announce within a month or two an offering of Certificates of Interest in the amount of $600,000,000 or more.

**ADVERTISING CAPS for . . .**
**the Most in Publicity and Good Will**
*Write Us for Samples and Prices*
**MINNESOTA SPECIALTY CO., INC.**
121 N. 4th St., Minneapolis 1, Minn.


# Revisions in Khapra Beetle Quarantine List

WASHINGTON—The Pest Control Branch, Agricultural Research Service, U.S. Department of Agriculture, has announced revisions in the list of premises designated as regulated areas in regard to the khapra beetle, effective Nov. 17.

The following premises have been ordered removed from the quarantine list, it having been determined by the chief of the Plant Pest Control Branch that adequate sanitation measures have been practiced for a sufficient length of time to eradicate the khapra beetle in and upon such premises:

**Arizona**

Arizona Sales Co., Mesa.
H. P. Fites ranch, Yuma.
Arthur McCoy property, Yuma.
F. P. Nielson & Sons, Mesa.
Pablo Ortiz property, Yuma.
Western Grain Elevator, Mesa.

**California**

B & J Farm Service, Porterville.
Joe Clement, Jr., ranch, Hanford.
Colusa Feed & Seed Co., Colusa.
J. Garafalo ranch, Colusa.
Will Gill & Sons feed yard, Madera.
J. D. Heiskell & Co., Inc., Tulare.
Steiner Feed & Seed, Bakersfield.
Triangle Grain Co., Bellflower.
Herman Vossler (large farm storage), Porterville.
Woodard Ranch (David Nowell, lessee), Blythe.

The following premises have been added to the list of places in which infestations of the khapra beetle have been determined to exist, and these premises are now designated as regulated areas:

**Arizona**

S. A. Batty farm, Glenbar.
Casey Seed Co., Phoenix.
Phoenix Hay & Feed Co., Phoenix.
Pratt's Feed & Farm Supply, Phoenix.

**California**

Thomas Blackman property (bag fumigation), Calexico.
Hershel Brady ranch, Brawley.
Madeline Britton property, Calexico.
Olaf Dahlquist ranch, Imperial.
Harry Finney ranch, Hinkley.
H. Johnson ranch, Terra Bella.
R. Langley ranch, Holtville.
Gene Malone ranch, Indio.
F. B. Marlow ranch, Westmorland.
Peter L. Marston ranch, El Cajon.
Kelly McCollum ranch, Imperial.
St. Anthony ranch (St. Anthony Oil Corp.), Mecca.
Walter E. Scott ranch, Blythe.
Mrs. L. E. Sinclair (residence), Calipatria.
Albert Whitlock ranch, Calipatria.
W. E. Young ranch, Calipatria.
William Youtsler ranch, Brawley.

## SELLS FEED FIRM

LAFAYETTE, MINN.—Mearle Isaacson has sold his interest in the Lafayette Feed Co. to Earl Johnson of Lafayette and Gordon Johnson of Prescott, Wis. Mr. Isaacson plans to move to Hastings, Minn., where he will work for Minnesota Mining & Manufacturing Co. Roger Isaacson will remain with the company.

Photo shows HARDY'S automatic scale feeders for salt and trace minerals (several of them batch-premixed) — Accuracy is assured!

- **ECONOMICAL** . . . due to our *quantity buying* of trace mineral ingredients — continuous *gravimetric mixing* plant — and outbound *shipment on the common salt freight rate* from our *centrally-located* salt plant at Manistee, Michigan.
- **IMPROVED QUALITY CONTROL** . . . through a *free flowing premix* of consistent uniformity — *greater bulk*, which increases effective accuracy of feed mill proportioning and mixing equipment — and our *laboratory testing service* from trace mineral ingredients to the salt draver in the feed mill.
- **FOR SMALL AND LARGE PLANTS** . . . adaptable to any size feed plant, from continuous push button mills to 10-ton per day batch mixers.
- **PROMPT, EFFICIENT SERVICE** . . . made possible by our many years of "know-how" — the most modern equipment — and our proven performance.

**Delivered Prices and Comparative Cost Analysis Furnished Without Obligation — Write Today!**

**GUARANTEED ANALYSIS OF HARDY TRACE MINERAL SALT**

| FORMULA No. 1 | |
|---|---|
| Manganese | 0.455% |
| Iodine | 0.011% |
| Cobalt | 0.010% |
| Iron | 0.165% |
| Copper | 0.048% |
| Sulphur (as Sulphates) | 0.300% |
| Salt | 97.000% |

| FORMULA No. 2 | |
|---|---|
| Manganese | 1.370% |
| Iodine | 0.022% |
| Cobalt | 0.013% |
| Iron | 0.330% |
| Copper | 0.048% |
| Zinc | .006% |
| Salt | 97.000% |

Both Formulae also available with Iodine and Manganese only.

**HARDY** THE ORIGINAL **TRACE MINERAL SALT**
—WITH "PROTEIN-BOUND" IODINE GUARANTEED 100% STABLE

HARDY SALT CO.; Drawer 449; St. Louis 3, Missouri

**CHARLES H. HUBBELL**
*CONSULTANT*
*Feed Formulation and Research*
Phone—Wabash 2-9065
53 W. Jackson Blvd. Chicago 4, Ill.

SPECIFY
*Columbia Calcium*
**COLUMBIA QUARRY CO.**
1007 Washington Ave
ST. LOUIS 1, MO.

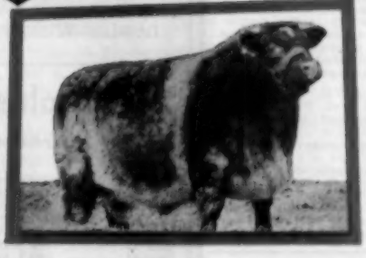
# Here's the New Borden's Bospro...

NOW BETTER THAN EVER!

BOS PRO

For years, Borden's Bospro has been recognized by quality-minded feed manufacturers as the ultimate in vitamin fortification for cattle and dairy feeds. All across the country, dozens of leading mills have come to rely on Bospro as an aid in helping their feeders avoid the serious losses which can result from poor growth, lowered milk production and disease.

The *new* Bospro, added to your dairy and cattle feeds, will help promote *greater utilization of low-cost roughage* and other feed ingredients, as well as stimulate the appetite to insure a steadier feed intake.



The *new* Bospro is designed to increase rumen activation, permitting the rumen micro-organisms to speed up the manufacture of many of the nutrients required for profitable milk and beef production.

The people who buy your feeds want two things . . . two things not always found in the same bag . . . maximum quality and maximum economy. The *new* Borden's Bospro will help you give them what they demand.

Get the full story *today!* Mail the coupon or wire collect.

**THE BORDEN COMPANY** FEED SUPPLEMENTS DEPARTMENT
350 Madison Avenue New York 17, N. Y.

Gentlemen: Please send us complete information about the *new* Borden's Bospro.

Name .....
Firm .....
Address .....
Town .....

BETTER FEEDS THROUGH RESEARCH

*Borden* IS BASIC IN FOOD AND FEED RESEARCH

# ☆ Classified Ads ☆

**Classified advertisements accepted until Wednesday each week for the issue of the following Saturday.**
**Rates: 15¢ per word; minimum charge $3.25. Situations wanted, 10¢ a word; $1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies.**

**Classified advertising rate not available for commercial advertising. Advertisements of new machinery, products and services accepted for insertion at minimum rate of $9 per column inch.**
**All Want Ads cash with order.**

## MACHINERY FOR SALE

**FOR SALE—ONE KLEEN-MIX MOLASSES** Mixer, used three or four months. A. A. Lowman, Jr., Millboro Spring, Va.

**NEW ROLLER MILL 7x36" WITH LePAGE** Cut, bargain only $750. W. H. Scribner, 5616 Grant St., Omaha, Neb.

**WHIRLAWAY AIRBLAST CAR LOADERS.** J. E. Hagan Mill Machinery, Jefferson City, Mo.

**FOR SALE—USED TEXAS CYCLINE AND** Angio - American Mixer. Wenger Mixer Mfg. Co., Sabetha, Kansas.

**CHAMPION MOBILE GRINDER AND** Mixer units. Champion Portable Mill Co., 2196 Como Ave. S. E., Minneapolis 14, Minn.

**FEED MIXER, 1-TON CAPACITY, GUAR-**anteed first-class throughout, 5 H.P. motor drive. Ad No. 8774, Feedstuffs, Minneapolis 1, Minn.

**6 "W" JAY BEE MILL WITH FAN, BASE** and coupling fully rebuilt, priced to sell, 60% off new price. W. H. Scribner, 5616 Grant St., Omaha, Neb.

**WHEN YOU ARE IN THE MARKET FOR** new or used mill machinery, electric motors or any other equipment, write J. E. Hagan Mill Machinery, Jefferson City, Mo.

**WRITE US, WE HAVE WHAT YOU NEED** in supplies for feed and flour mills. If it's new or used, buy it from Hughes, Wayland, Mich.

**FOR SALE—TWO USED ST. REGIS NO.** 100-F.S. valve bag packers. Used slightly, condition good. Price $300 each, f.o.b. Minnesota. North Star Dairy, 625 New York Bldg., St. Paul 1, Minn.

**FOR SALE—ONE 1952 CENTURY MODEL** California Pellet Mill with cooler, granule cutter and shaker. One Richardson automatic bagging scale. Five Union Special bag closing machines and other feed milling equipment. Geis Mills, Box 9, Enid, Okla.

**NEW AND USED EQUIPMENT CLOSE-**outs—New Troughing Idlers and Return Rolls. Prices from $7.00. Conveyor and elevator belting in excellent condition. $1.00 per foot up. Write for List No. 1124. Bonded Scale Co., 124 Bellview, Columbus, Ohio. Phone: Hi 4-2186.

**FOR SALE—SCHUTTE MODEL 27 MILL** with 50 H.P. Westinghouse motor with dust collector, pipe, magnet on base connected with flexible coupling. Good condition. Can be seen in operation next two weeks. Green Camp Cooperative Elevator, Green Camp, Ohio.

**THREE CALIFORNIA STANDARD AND** intermediate heavy duty pellet mills, complete with starters, motors and spare parts. Mills now operating. Being replaced by higher capacity equipment. Priced to sell. Ad No. 1295, Feedstuffs, Box 67, Minneapolis 1, Minn.

**ONE SPROUT WALDRON 75 H.P. PELLET** Ace Model 501B, complete with motor and starter and die. Mill in excellent operating condition, run only two years. Replaced because owner standardized on one type machine. Ad No. 1296, Feedstuffs, Box 67, Minneapolis 1, Minn.

**FOR SALE—WENGER MOLASSES MIXER;** 4,000 lb. vertical feed mixer; 20x24 flaking rolls; 36" double attrition mill; 2,000 lb. horizontal mixers; Richardson automatic scales; Union Special sewing machines; steel elevator legs; conveyors; motors; hammermills; pellet mills. Hagan Mill Machinery, Box 574, Jefferson City, Mo.

**USED ELEVATOR BUCKETS, BELTING** and bolts; used electric motors; rebuilt and guaranteed No. 4 American reducers; Reeves speed changers; rebuilt and guaranteed Tag Testers; No. 15 Prater Hammermill; 18" S-W double runner attrition mill, two 15 H.P. direct connected, 220-volt; 16 ft. double chain drag; 6" dia. used screw conveyor; 600 Nu-Ify buckets 12x4, new. Ad No. 1314, Feedstuffs, Box 67, Minneapolis 1, Minn.

## MACHINERY WANTED

**WANTED TO BUY — RICHARDSON** scales, bag closing machines and other good mill, feed and elevator equipment. J. E. Hagan Mill Machinery, Jefferson City, Mo.

## SITUATIONS WANTED

**TOPNOTCH FEED MILL PRODUCTION** engineer available. Have successfully streamlined mill operations by efficient processing methods, cost control and personnel training. I can help you. Ad No. 1281, Feedstuffs, 612 Board of Trade, Kansas City, Mo.

## HELP WANTED

**WANTED SALESMAN INTERESTED IN** specialty items sold to veterinarians only, to add to present representation. Ad No. 1308, Feedstuffs, Box 67, Minneapolis 1, Minn.

**SALESMEN—INCREASE YOUR INCOME—** Represent our modern line of livestock remedies, antibiotic and vitamin feed supplements. Commission basis, drawing account for men who prove they can produce. Replies confidential. Sales Manager, Box 208, Caldwell, Ohio.

**OFFICE MANAGER—OLD ESTABLISHED** eastern feed manufacturing concern. Present manager retiring. Young man or woman. Thorough knowledge of accounting necessary. Give complete qualifications by letter. Ad No. 1297, Feedstuffs, Box 67, Minneapolis 1, Minn.

**SALESMAN—NEW MEXICO—TO REPRE-**sent nationally known milling machinery manufacturer. Add to present line if non-competitive. Full commission allowed on exclusive basis. State experience and education. Territory available immediately. Ad No. 1305, Feedstuffs, Box 67, Minneapolis 1, Minn.

**WANTED—NUTRITIONIST TO ASSIST IN** our livestock department, helping with formula work for our accounts in manufacturing their finished feeds. Wonderful opportunity. Good chance for advancement. When answering give full details. One of the oldest and largest vitamin and trace mineral manufacturers. Ultra-Life Laboratories, Inc., East St. Louis, Ill.

**SALES MANAGER WANTED — EASTERN** Pennsylvania feed manufacturing firm has an excellent opportunity for the right person capable of handling sales and merchandising of poultry and dairy feeds. Forward qualifications, experience and recent photograph if possible. Include salary requirements. Information will be kept in absolute confidence. Ad No. 1310, Feedstuffs, Box 67, Minneapolis 1, Minn.

**FEED SALES & SERVICE MEN NEEDED—** Have opening for two well-trained feed service men. Live in Chattanooga, Tenn., area. Home every night. Automobile and expenses. Very attractive weekly salary with guaranteed annual wage. Only experienced men should apply. Age 30 to 45. Dairy, livestock and hog experience preferred. Ad No. 1312, Feedstuffs, Box 67, Minneapolis 1, Minn.

**TOP CALIBER SALES ENGINEER OR** salesman with feed machinery background to represent nationally known manufacturer of feed milling equipment. Two territories open in southeast and south central sections of country for a line of equipment which is the leader in its field, backed by an expanding, reputable firm. Position permanent, with top remuneration for qualified men. Address 890, Feedstuffs, Minneapolis 1, Minn.

**FEED SALESMAN AND RESALEMAN** wanted for Midwest area. Free insurance, hospitalization, retirement. High base salary, bonus, expenses paid. If you are experienced in the feed business, this is the lifetime opportunity you are looking for. Our company is nationally known. Age 30 to 50. Reply giving age, marital status, and experience in feed sales or in allied industry. All replies will be handled in strict confidence. Ad No. 1311, Feedstuffs, Box 67, Minneapolis 1, Minn.

## BUSINESS OPPORTUNITIES

**FOR RENT—BUILDING ON 23,000 SQ. FT.** of ground with trackage available. Iowa Investment Co., 605 First Ave. So., Fort Dodge, Iowa. Phone: 5-7191.

**NEW AND MODERN ELECTRIC PUSH** button mill, seed and feed store. Building is brick and steel with 17,500 sq. ft. floor space. Equipment includes: Two 6,000 lb. mixers, one 24" hammer mill with 200 H.P. motors, one Puritan mixer, one 6,000 gallon molasses tank, one 50-ton truck hoist, one 60-ton automatic Toledo print weight scale, 12,000-bu. grain storage tank with elevator, one corn cutter, one oat crimper, one pea and bean thresher, one 5,000-bu. ear corn storage room, one No. 2A Western corn sheller, four grain trucks and trailer. Over-all business doing $15,000 to $25,000 per month. For full particulars and pictures write to Wayne County Milling Co., Jesup, Ga. Phone: Day, 3200; night, 3346. Terms can be arranged.

Our Exclusive Business
COUNTRY ELEVATORS
and FEED MILLS
*When you want to buy or*
*When you want to sell*
See or Write
**MID-WEST BUSINESS EXCHANGE**
Halbert C. Smith Plymouth, Ind.

**★ Buy and Sell Through WANT ADS ★**

## BABY CHICKS FOR SALE

**BABY CHICKS—AS HATCHED OR SEXED** —Five popular breeds and one hybrid. Quality - Quantity - Service. Wholesale prices. Milford Hatchery, Liberty Road, Randallstown, Md.

# Minnesota Agronomists Revise Recommended List of Farm Crops

ST. PAUL — Three oat varieties were added to the University of Minnesota's recommended list of farm crops and five were removed at the annual Agricultural Experiment Station Varietal Recommendations Conference last week.

According to Will M. Myers, head of the Department of Agronomy and Plant Genetics, all varieties susceptible to stem rust Race 7 were removed from the list. This race has been the most damaging one to oat crops in the past several years. The varieties removed are: Bonda, Mindo, Clinton, Clintafe and James.

Added to the recommended list of oats were Sauk, which resists Race 7, and Rodney and the Improved Garry, which resist both Race 7 and 8 at moderate temperatures. All three are late-maturing varieties.

Remaining on the recommended list are: Ajax, Andrew, Branch and Missouri 0-205, resistant to Race 7, and Minland, resistant to all prevalent races of stem rust except 7A and to all races of crown rust. Other changes in the list are as follows:

SPRING WHEAT—Rushmore was dropped because of its susceptibility to stem rust Race 15-B and its poor performance over a period of years. Lee and Selkirk remain on the list, but Selkirk resists Race 15-B better than Lee.

DURUM WHEAT—Carleton, Mindum and Stewart were removed because of susceptibility to Race 15-B. Two new 15-B resistant varieties, Langdon and Ramsey, were added to the list and a "stop-gap" variety, Sentry, which is not resistant but tolerates 15-B reasonably well, was added also.

SOYBEANS — Two were added, Acme, a very early variety suited to the northern corn maturity zone and northern Minnesota, and Harosoy, a late variety adapted to the southern corn maturity zone. These join Flambeau, Norchief, Ottawa Mandarin, Capital, Grant, Renville, Chippewa and Blackhawk.

CORN* — Minhybrid 504 and 607 were dropped because superior varieties are available.

ALFALFA—Vernal was added. It has more wilt resistance than any adapted variety now in production in this area.

No changes in recommended varieties of flax, rye, barley and other crops were announced.

For further information, including a variety's yield potential, disease resistance and maturity in the several Minnesota zones, Extension Folder 22, "Varieties of Farm Crops," can be obtained free at county agent's offices or from the Bulletin Room, Institute of Agriculture, University of Minnesota, St. Paul 1, Minn.

# Record Turnout for St. Louis Function

ST. LOUIS—The annual dinner dance of the St. Louis Milling & Grain Club was held Nov. 26, in the Starlight Room of the Chase Hotel in St. Louis. About 310 members and guests, the largest attendance at any meeting in the club's history, were present.

A reception and cocktail party preceded the dinner. Following the dinner Edward B. Scanlon, Elam Grain Co., president of the club, welcomed the audience and distributed attendance prizes.

It was announced that the annual meeting of the St. Louis Milling & Grain Club will again be held in conjunction with the annual meeting of the Merchants Exchange of St. Louis and is scheduled for Jan. 11.

# Wholesale Feedstuffs Price Index

**INDEX NUMBERS OF WHOLESALE FEEDSTUFFS PRICES**
**BASE PERIOD 1935-39=100**

| Season | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Aver. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1955-56 | 194.4 | 186.0 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 1954-55 | 216.9 | 221.6 | 222.2 | 223.0 | 222.8 | 216.5 | 211.0 | 201.5 | 199.5 | 197.7 | 191.9 | 195.3 | 210.0 |
| 1953-54 | 201.3 | 203.6 | 226.2 | 234.8 | 239.0 | 248.1 | 266.4 | 262.8 | 239.5 | 242.0 | 237.3 | 219.3 | 234.1 |
| 1952-53 | 262.4 | 257.2 | 257.3 | 251.7 | 242.0 | 238.3 | 237.8 | 229.2 | 215.7 | 215.4 | 211.3 | 205.5 | 234.1 |
| 1951-52 | 258.9 | 269.0 | 274.6 | 277.1 | 274.0 | 273.0 | 279.4 | 277.4 | 275.6 | 270.9 | 292.6 | 283.4 | 251.8 |
| 1950-51 | 207.8 | 221.1 | 229.0 | 233.6 | 241.3 | 240.3 | 243.9 | 240.7 | 237.4 | 240.4 | 236.6 | 246.6 | 234.3 |
| 1949-50 | 212.5 | 209.7 | 214.2 | 206.7 | 202.9 | 213.4 | 221.8 | 227.3 | 227.3 | 251.2 | 227.5 | 213.6 | 219.5 |
| 1948-49 | 208.8 | 230.4 | 230.0 | 226.5 | 210.8 | 214.2 | 226.4 | 221.4 | 215.5 | 229.3 | 229.2 | 219.4 | 222.6 |
| 1947-48 | 283.6 | 283.1 | 301.9 | 313.7 | 281.8 | 272.6 | 276.3 | 271.6 | 277.1 | 259.4 | 220.1 | 221.7 | 271.8 |
| 1946-47 | 229.7 | 254.0 | 221.6 | 208.6 | 197.4 | 236.7 | 224.6 | 223.0 | 238.8 | 257.1 | 263.9 | 288.1 | 237.0 |

Compiled by Market News Branch, Grain Division, Agricultural Marketing Service, U.S. Department of Agriculture.

**INDEX NUMBERS OF FEED GRAIN PRICES (CORN, OATS, BARLEY AND GRAIN SORGHUMS), OCTOBER, 1935, TO SEPTEMBER, 1946—100**

| Season | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Aver. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1955-56 | 175.4 | 176.0 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 1954-55 | 231.4 | 216.2 | 216.5 | 213.8 | 211.0 | 205.4 | 208.1 | 214.3 | 212.9 | 209.2 | 192.7 | 185.1 | 208.9 |
| 1953-54 | 206.4 | 208.1 | 219.0 | 218.3 | 215.9 | 218.6 | 220.6 | 223.8 | 225.5 | 223.1 | 225.4 | 224.9 | 219.1 |
| 1952-53 | 228.3 | 233.0 | 233.0 | 227.4 | 218.9 | 221.6 | 221.4 | 226.3 | 218.7 | 221.0 | 224.4 | 223.9 | 224.7 |
| 1951-52 | 247.6 | 261.4 | 272.7 | 269.1 | 264.5 | 266.5 | 264.7 | 256.2 | 254.6 | 252.1 | 253.4 | 249.4 | 256.8 |
| 1950-51 | 207.5 | 219.9 | 232.0 | 240.3 | 250.2 | 245.8 | 247.4 | 240.6 | 236.6 | 240.6 | 241.8 | 243.1 | 237.6 |
| 1949-50 | 173.8 | 173.5 | 184.0 | 184.6 | 186.2 | 190.6 | 201.6 | 211.3 | 211.3 | 216.6 | 211.6 | 210.9 | 196.4 |
| 1948-49 | 207.8 | 201.3 | 205.6 | 203.1 | 183.3 | 193.3 | 197.3 | 187.5 | 189.3 | 192.7 | 181.3 | 181.6 | 193.7 |
| 1947-48 | 334.1 | 344.6 | 367.0 | 378.8 | 319.1 | 326.8 | 325.4 | 322.3 | 320.7 | 284.6 | 262.2 | 243.1 | 319.0 |
| 1946-47 | 354.8 | 310.4 | 194.8 | 192.0 | 200.4 | 244.0 | 248.3 | 251.1 | 285.4 | 294.4 | 322.3 | 343.0 | 263.5 |

Compiled by Market News Branch, Grain Division, Agricultural Marketing Service, U.S. Department of Agriculture.

# USDA Report of Feedstuffs Production

**(In tons, 000's omitted)**

| Feedstuffs— | Monthly production Oct., 1955* | Sept., 1955 | Oct., 1954 | Season's production Oct., '54-Sept., '55 | Oct., '53-Sept., '54 | Oct., '52-Sept., '53 |
|---|---|---|---|---|---|---|
| Soybean meal | 580.0 | 429.5 | 499.6 | 5,704.3 | 5,050.6 | 5,551.3 |
| Cottonseed meal | 325.5 | 233.3 | 330.4 | 3,515.4 | 3,014.4 | 2,981.0 |
| Linseed meal | 79.4 | 56.2 | 65.6 | 644.3 | 576.7 | 467.7 |
| Peanut meal | 1.0 | .6 | 1.7 | 18.5 | 63.3 | 62.0 |
| Copra meal | 11.1 | 8.5 | 11.6 | 117.4 | 116.0 | 116.1 |
| Total oilseed meals | 1,000.0 | 729.1 | 908.9 | 9,999.9 | 8,820.9 | 8,848.1 |
| Wheat millfeeds | 410.0 | 377.9 | 397.7 | 4,477.1 | 4,424.8 | 4,460.0 |
| Rice millfeeds | 30.3 | 30.1 | 27.0 | 303.0 | 273.2 | 263.1 |
| Gluten feed and meal | 90.6 | 82.3 | 88.2 | 1,004.6 | 929.4 | 942.4 |
| Distillers dried grains | 28.1 | 23.1 | 22.0 | 249.9 | 245.3 | 185.7 |
| Brewers dried grains | 18.6 | 20.3 | 16.3 | 238.4 | 226.5 | 228.7 |
| Alfalfa meal | 116.3 | 141.9 | 109.7 | 1,334.6 | 1,254.5 | 1,070.6 |
| Total mill products | 693.7 | 675.6 | 660.9 | 7,607.6 | 7,353.7 | 7,150.5 |
| Total feedstuffs | 1,693.7 | 1,404.7 | 1,569.8 | 16,592.5 | 16,174.6 | 15,998.6 |

*Preliminary.

## Farm Commodity-Feed Price Ratio

| | U.S. | New Eng. | Mid-Atl. | East North Cent. | West North Cent. | South Atl. | East South Cent. | West South Cent. | Mount. | Pac. |
|---|---|---|---|---|---|---|---|---|---|---|
| **CHICKEN-FEED—** | | | | | | | | | | |
| **Farm Chickens:** | | | | | | | | | | |
| November, 1955 | 5.3 | 4.6 | 5.9 | 5.6 | 5.0 | 5.4 | 5.7 | 5.4 | 4.9 | 4.5 |
| October, 1955 | 5.3 | 4.6 | 5.8 | 5.8 | 5.2 | 5.2 | 5.4 | 5.2 | 5.1 | 4.7 |
| November, 1954 | 3.8 | 3.5 | 4.4 | 4.0 | 3.4 | 4.4 | 4.2 | 4.3 | 4.2 | 3.3 |
| Average (1944-53) | 7.0 | | | | | | | | | |
| Average (Nov., 1944-53) | 6.6 | | | | | | | | | |
| **Broilers:** | | | | | | | | | | |
| November, 1955 | 4.5 | 4.5 | 5.1 | 4.9 | 4.9 | 4.3 | 4.6 | 4.7 | 5.3 | 4.1 |
| October, 1955 | 4.6 | 4.5 | 5.4 | 4.9 | 4.8 | 4.3 | 4.8 | 4.8 | 5.4 | 4.9 |
| November, 1954 | 3.9 | 3.9 | 4.7 | 4.4 | 4.3 | 3.8 | 3.7 | 4.0 | 5.2 | 4.4 |
| **TURKEY-FEED—** | | | | | | | | | | |
| November, 1955 | 9.0 | 8.6 | 10.6 | 9.9 | 9.7 | 8.4 | 8.3 | 8.7 | 8.0 | 7.1 |
| October, 1955 | 9.2 | 8.3 | 10.2 | 10.0 | 10.8 | 8.1 | 8.8 | 8.6 | 8.2 | 7.0 |
| November, 1954 | 7.5 | 6.6 | 9.4 | 8.9 | 8.5 | 7.2 | 7.6 | 7.0 | 7.0 | 6.9 |
| Average (1944-53) | 9.5 | | | | | | | | | |
| Average (Nov., 1944-53) | 10.0 | | | | | | | | | |
| **EGG-FEED—** | | | | | | | | | | |
| November, 1955 | 12.9 | 13.6 | 14.6 | 13.0 | 11.5 | 14.2 | 14.7 | 13.5 | 13.2 | 10.7 |
| October, 1955 | 12.5 | 13.2 | 14.3 | 12.5 | 11.2 | 13.6 | 13.5 | 12.7 | 12.3 | 11.3 |
| November, 1954 | 9.0 | 10.1 | 11.3 | 8.6 | 7.1 | 10.5 | 10.0 | 9.4 | 9.1 | 8.1 |
| Average (1934-53) | 13.1 | | | | | | | | | |
| Average (Nov., 1934-53) | 15.4 | | | | | | | | | |

| | U.S. | North Atl. | East North Cent. | West North Cent. | South Atl. | South Cent. | West |
|---|---|---|---|---|---|---|---|
| **MILK-FEED—** | | | | | | | |
| November, 1955 | 1.51 | 1.48 | 1.51 | 1.52 | 1.66 | 1.74 | 1.36 |
| October, 1955 | 1.46 | 1.45 | 1.44 | 1.51 | 1.60 | 1.62 | 1.33 |
| November, 1954 | 1.36 | 1.39 | 1.30 | 1.37 | 1.56 | 1.50 | 1.34 |
| Average (1934-53) | 1.27 | | | | | | |
| Average (Nov., 1934-53) | 1.43 | | | | | | |
| **BUTTERFAT-FEED—** | | | | | | | |
| November, 1955 | 22.4 | ... | 21.1 | 24.5 | ... | 16.3 | 18.1 |
| October, 1955 | 22.0 | ... | 20.1 | 24.3 | ... | 15.7 | 17.6 |
| November, 1954 | 20.1 | ... | 18.5 | 21.9 | ... | 14.6 | 17.2 |
| Average (1934-53) | 23.4 | | | | | | |
| Average (Nov., 1934-53) | 24.8 | | | | | | |

| | U.S. | North Cent. |
|---|---|---|
| **HOG-CORN—** | | |
| November, 1955 | 11.2 | 11.1 |
| October, 1955 | 12.7 | 13.0 |
| November, 1954 | 13.5 | 13.7 |
| Average (1934-53) | 12.8 | 13.6 |
| Average (Nov., 1934-53) | 13.6 | 14.4 |

**NOTE: Ratios computed at mid-month by U.S. Department of Agriculture. Ratios represent number of pounds of poultry feed equal in value to 1 lb. live farm chicken, turkey or 1 doz. eggs; pounds broiler growing mash equal to 1 lb. broiler; pounds concentrate rations equal to 1 lb. milk or butterfat; bushels of corn equal to 100 lb. hog. Increases in ratios are favorable to the feeder.**

**KEY TO GEOGRAPHICAL DIVISIONS**

Here is a guide to the states included in the geographical divisions listed in the accompanying commodity-feed price ratios:

**New England:** Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.

**Mid-Atlantic:** New York, New Jersey, Pennsylvania.

**North Atlantic:** New England and Mid-Atlantic states combined.

**East North Central:** Ohio, Indiana, Illinois, Michigan, Wisconsin.

**West North Central:** Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas.

**North Central:** Combination of the two foregoing.

**South Atlantic:** Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida.

**East South Central:** Kentucky, Tennessee, Alabama, Mississippi.

**West South Central:** Arkansas, Louisiana, Oklahoma, Texas.

**South Central:** Combination of the two above.

**Mountain:** Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada.

**Pacific:** Washington, Oregon, California.

**West:** Combination of the two above.

## Hale W. Manuel, 57, Pillsbury Official, Dies

WICHITA, KANSAS — Hale W. Manuel, 57, manager of the grain merchandising office at Wichita, Kansas, for Pillsbury Mills, Inc., died Dec. 3 of injuries received in an automobile collision Nov. 30.

Mr. Manuel entered the grain business with the Washburn-Crosby Co. in Minneapolis in 1922 and joined Pillsbury at Wichita in 1929. He was a grain buyer for Pillsbury in Minneapolis from 1936 to 1942, returning in the latter year to Wichita where he had resided since.

Mr. Manuel was a native of St. James, Minn., and a graduate of the University of Minnesota. He had done extensive work in wheat rust. At Wichita he was a director of the Wichita Symphony and the Chamber of Commerce. Surviving are his widow, Hazel; two daughters, two grandchildren, two brothers and a sister.

Hale W. Manuel

## Long-Time Kansas City Exchange Member Dies

KANSAS CITY—Roy D. Crawford, secretary and general manager of the Farmers Union Jobbing Assn., Kansas City, died Dec. 6. Mr. Crawford had been in poor health for some time and had been in a hospital since August.

One of the long-time members of the Kansas City Board of Trade, Mr. Crawford started as a grain salesman with the jobbing association in Kansas City more than 30 years ago. He became manager in 1946. He had been a member of the board of directors of the Kansas City Board of Trade since 1953 and served on many committees of the exchange.

He is survived by his widow.

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## Carl Addington, Grain Man, Dies at 75

KANSAS CITY—Carl Addington, 75, veteran Kansas City grain man, died at Independence, Mo., Dec. 2. Mr. Addington had been at his work as merchandising and traffic man at the Kansas City offices of Bunge Corp. as late as Nov. 29 when he suffered a heart attack.

He had been associated with the grain industry for 62 years. Coming to Kansas City from Ridgeville, Ind., when he was 13, Mr. Addington went to work in the old Board of Trade Building as a messenger. He was born in Ridgeville and lived there until 1893.

For a time he was a member of the Kansas City Board of Trade. His activity in Kansas City grain circles was continuous except for seven years spent in St. Joseph, Mo., in 1920's. He had been with the Bunge Corp. since 1948.

Survivors include his widow, Mrs. Maude Addington, four sons, a daughter, two sisters, 13 grandchildren and five great-grandchildren. Funeral services were held in Independence Dec. 6 and burial was in the Mount Washington Cemetery, Kansas City.

## New Appointments Announced by Hudson

NEW YORK—Norman T. Whittle, district manager for the multi-wall division of the Hudson Pulp & Paper Corp. in the Texas-Louisiana territory, with headquarters at Houston, has been transferred to Atlanta in the same capacity for the southeastern areas.

John W. Casey, who has just joined Hudson, will fill the Houston post and represent Hudson in the Texas-Louisiana territory.

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## PELLET FEEDING

(Continued from page 16)

brought to a halt. All lambs had access to the same feed and could consume as much as they desired without discrimination. Aggressive lambs got their fill, turned away and allowed the more timid ones to fill up on the same ration, an item held responsible for the high degree of upgrading of the flock. Mr. Clark found that the animals averaged a consumption of 4 lb. of pellets and 1½ lb. of grass silage per head per day.

The Sutter Basin Land Co. makes its pellets and sells them to its lambing operation at $53 ton. The company also sells the pelletized ration to several other sheepmen at $57.50 ton sacked or $53 ton bulk. The firm has done this as a help to others in the feeder business, not as a feed dealer, and the managers say they do not desire to get into the feed dealing business.

What does this new development mean to California feed dealers? Answers to this question show that it means a whole new list of prospective feed buyers has been opened up among sheepmen in the western states. With lambs now proven to thrive successfully on this type of feeding, sheepmen that formerly fed out lambs on what grasses were available can now switch to the pellets for finishing out their stock.

Feed men can now find a market among wool growers that prior to this time never existed. It might mean installation of pelletizing equipment will be necessary for many, but with this fertile field opened up by pellets along with the growing demand for pelletized feeds in other livestock and poultry enterprises, the machinery should pay for itself in a short time.

## *Arkansas Team Wins in Poultry Judging Meet*

CHICAGO—The University of Arkansas won first place team honors in all-around judging at the 32nd annual Inter-Collegiate Poultry Judging Contest in Chicago Nov. 29-30, in which students from 20 colleges and universities participated.

Coached by J. C. Gilbreath, the University of Arkansas team scored 3,761 points out of a possible 4,500 for all-around judging in fields covering production, breed selection and market products. Team members, all from Arkansas, are William Dean, Malvern; Warren Rudolph, Pleasant Plains; Bobby Jones, Dierks, and James Whitmore (alternate), Nashville.

The Arkansas team was awarded the traveling grand trophy of the Institute of American Poultry Industries, an award which is retained by a team when it wins first place in all-around judging three times. It was also awarded the Ralston Purina champion trophy for 1955. The presentations were made by Prof. H. L. Kempster, University of Missouri.

Rutgers University, coached by R. K. Ringer, tied for first with the University of Arkansas in the team placings in market products judging. Cornell University won first place team honors in production judging. The Arkansas team also took first place in breed selection judging.

Here is how the schools finished in the all-around team placings: (1) University of Arkansas, (2) Texas A&M College, (3) Cornell University, (4) Kansas State College, (5) Rutgers University, (6) State College of Washington, (7) University of Kentucky, (8) Iowa State College, (9) Ohio State University, (10) Purdue University, (11) Pennsylvania State University, (12) South Dakota State College, (13) University of Connecticut, (14) North Carolina State College, (15) Oklahoma A&M College, (16) Michigan State University, (17) University of Wyoming, (18) University of Missouri, (19) Southern Illinois University, (20) National Agricultural College.

Manager of the judging contest, which was sponsored by many organizations and firms, was Dr. E. E. Schnetzler, DeKalb Hybrid Seed Co., Sycamore, Ill. Dr. Cliff D. Carpenter, president of the Institute of American Poultry Industries, was master of ceremonies at the banquet. Representatives of the Quaker Oats Co., Swift & Co., Allied Mills, Inc., Hales & Hunter Co., the institute, and the Poultry & Egg National Board had charge of arrangements.

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## Cotton Bag Sewing Queen Selected

CHICAGO—Mrs. Norman F. MacNeil of Midvale, Utah, has been named Cotton Bag Sewing Queen for 1955. Her exhibit of apparel and household items sewn from cotton feed, flour, salt and sugar bags was chosen best of 62 entries from 37 states in the national finals in Chicago. Each entry had previously won first prize in a state or regional fair.

Mrs. Julius Jones of Alva, Okla., was second, and Mrs. Charles A. Carlson of Vicksburg, Miss., was third.

Mrs. MacNeil was presented as queen Nov. 15 at a press reception in the Morrison Hotel which featured a Feed Bag Fashion Revue—with six top Chicago models showing the latest styles which can be made from cotton bags.

Sponsors of the contest are the National Cotton Council, Textile Bag Manufacturers Assn., and Pfaff Sewing Machines. The cotton bag sewing contest is held annually to encourage the reuse of cotton bags for home sewing.

## Oil Chemists Society To Meet April 23-25

CHICAGO—Plans for the 47th annual spring meeting of the American Oil Chemists Society to be held April 23-25 at the Shamrock Hotel in Houston, Texas, were announced recently by William Argue, with Anderson, Clayton Co., general chairman. Technical papers to be presented will deal with basic fundamental contributions in the field of oils and fats, research, methods, processing and related materials.

Also announced recently was the fall meeting of the society which will be held in Chicago at the Sherman Hotel Sept. 24-26.

### NEW MILL OPERATING

POTTER, WIS.—A new feed mill has been opened here by Ray Rusch. Mr. Rusch, who has been operating a hay buying business, built the mill after fire destroyed the elevator and mill in Potter and the owners decided not to rebuild.

# UP OR DOWN?

**By Leonard W. Schruben**
**Agricultural Economist, Kansas State College**

## SEASONAL CHANGES IN BRAN PRICES

How much will the price of bran change this season? How much inventory should I carry? Feed manufacturers face these questions in deciding on a buying and inventory program for brar. This article was written to give you some facts about the seasonal changes in bran prices.

Prices of many formula feed ingredients move up and down with the season. Some are more consistent than others. Bran prices have regularly been higher in April than any other month of the year. Low prices generally occur during the summer months through early fall.

Prices of ingredients change from time to time as every purchasing director knows. Also, the price of one ingredient may be going up at the same time another kind is going down. Sometimes these shifts occur with the season, and you may find it possible to substitute one ingredient for another as these changes in price occur.

No one has yet discovered a method that always will result in a correct price forecast. Bran price patterns vary so much from one year to another that forecasts are especially difficult. However, careful study of the accompanying exhibits will give you a better picture of the usual pattern and will help you in deciding what to do this year.

Exhibit 1 shows an index of seasonal price variation for bran. The wholesale price at Minneapolis has been used to calculate this index. This index is a statistical method of indicating price changes from one season to another and includes the years from 1920 through 1953. Notice how low prices come in summer. The higher prices come in the winter months.

The shaded area around the heavy black line indicates the range within which the index is most likely to fall in any one year. The narrower the band the more regular prices have followed the usual pattern in past years.

Exhibit 1 is very useful in picturing the "usual" market. But you don't always buy or sell on this market. Each year generally differs from the average and you need to take this into account.

Exhibit 2 indicates the number of times the Chicago price of bran has gone up after any given month from 1920 through 1952. It looks complicated at first glance, but don't let that scare you. Once you get the hang of it, you will find it easy to use. You may want to clip it for future reference.

Here is how to use Exhibit 2. Suppose you are deciding whether or not to buy bran. Not that past patterns will necessarily be followed this year, but it might help to know how they have worked out in past years.

To read the table, you find the current month in the first column. In this case it is December. You then read on that same line to find the per cent of times prices went up in following months. Under January you will find a 50. This means that 50% of the time bran prices in Chicago went up from December to January. Other months are read in the same way.

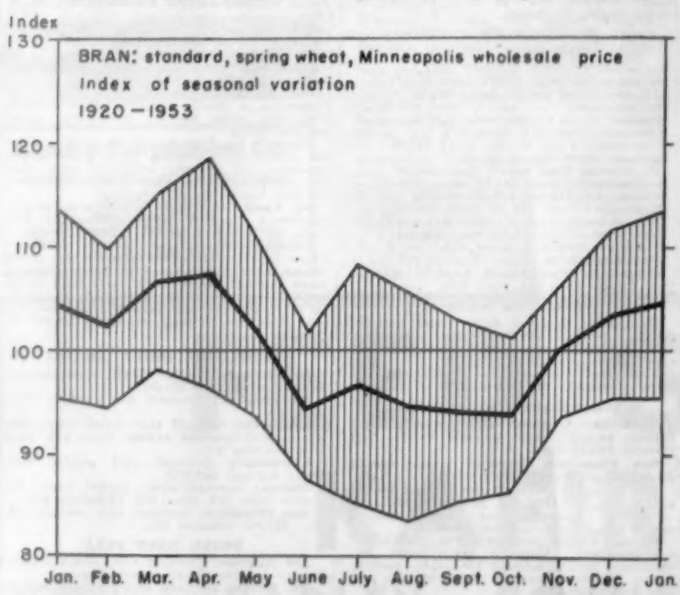


**EXHIBIT 1—Bran, standard, spring wheat, Minneapolis wholesale price. Index of seasonal variation, 1920-1953.**

**EXHIBIT 2: Bran, standard, spring wheat, Chicago, percent of times price went up from base month to subsequent month, 1920-1952.**

| Base month | SUBSEQUENT MONTH | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
| January | 31 | 47 | 59 | 44 | 28 | 31 | 31 | 34 | 38 | 44 | 50 | 48 | | | | | | | | | | | |
| February | | 66 | 69 | 50 | 34 | 31 | 34 | 34 | 38 | 41 | 47 | 55 | 55 | | | | | | | | | | |
| March | | | 59 | 38 | 34 | 28 | 38 | 34 | 34 | 44 | 47 | 42 | 29 | 48 | | | | | | | | | |
| April | | | | 19 | 13 | 31 | 28 | 28 | 31 | 34 | 41 | 32 | 26 | 29 | 55 | | | | | | | | |
| May | | | | | 28 | 31 | 31 | 38 | 38 | 38 | 41 | 42 | 39 | 52 | 58 | 61 | | | | | | | |
| June | | | | | | 38 | 44 | 50 | 47 | 59 | 59 | 65 | 58 | 71 | 71 | 68 | 58 | | | | | | |
| July | | | | | | | 42 | 39 | 45 | 55 | 64 | 63 | 59 | 66 | 69 | 63 | 53 | 50 | | | | | |
| August | | | | | | | | 33 | 39 | 70 | 73 | 69 | 69 | 69 | 75 | 69 | 63 | 56 | 56 | | | | |
| September | | | | | | | | | 42 | 64 | 64 | 75 | 72 | 72 | 75 | 75 | 63 | 59 | 53 | 53 | | | |
| October | | | | | | | | | | 76 | 70 | 75 | 66 | 69 | 66 | 66 | 53 | 47 | 47 | 44 | 50 | | |
| November | | | | | | | | | | | 52 | 63 | 47 | 66 | 66 | 59 | 47 | 41 | 38 | 44 | 44 | 53 | |
| December | | | | | | | | | | | | 50 | 41 | 53 | 63 | 47 | 34 | 34 | 31 | 38 | 38 | 50 | 53 |

## FEED CONFERENCE

(Continued from page 1)

the feed brand name to that of a drug which is incorporated in the feed.

This problem spreads itself across the board to the state regulatory bodies which are responsible for labeling.

It has been asserted on occasion by state control officials that FDA has failed to notify them of drug use approvals although manufacturers of these drugs designed for feed industry use have previously been given complete information.

Items like this, not of such great significance, are not likely to resolve themselves into any major controversial issue at the meetings. For this reason, FDA has taken the opportunity to bring all issues into full light of discussion—a decision which may result in some major changes which will satisfy all parties concerned.

The labeling issue is one which cannot be resolved except by congressional changes in the FDA law. That law requires in effect that the drug component of a manufactured feed dominate the label. This means that brand names must be subordinated, and the product may appear to the consumer not as a feed but as a drug product.

Although this issue may be a leading one at the conference, there are other aspects of the issue which may be clarified. One of them is that of the responsibility and liability of a feed manufacturer selling a feed which is now labeled as a drug product.

The feed industry, it is said, now stands in an unclear position on this matter. It is hoped that the airing of views by a top-level group from all segments of the industry may reach some avenues of attack on the problem.

In announcing the conference, FDA pointed out that under the law, medicated feeds are required to contain the amounts of the various drugs which are declared on their labels. This involves such problems as methods of mixing, production control, assay techniques, expiration dates, claims of efficacy and related research problems. And some of these problems will be discussed by speakers at the symposium.

A number of speakers already are scheduled to speak on various phases of medicated feeds.

All persons interested in attending the meetings and those wishing to present papers are requested to get in touch with Dr. Charles G. Durbin, associate veterinary medical director, Food & Drug Administration, Washington 25, D.C.

### Speakers Listed

Following is a list of papers and speakers scheduled to date:

History of Medicated Feeds, Dr. J. E. Hunter, Allied Mills, Libertyville, Ill.; Types of Medicated Feeds (general), Dr. R. E. Lubbehusen, Ralston Purina Co., St. Louis; Coccidiostats and Anti-Enterohepatitis Agents in Feeds, Dr. Sterling Brackett, American Cyanamid Co., New York; Hormones in Feeds, Dr. T. Byerly, Agricultural Research Service, U.S. Department of Agriculture; Antibiotics in Feeds for Growth Promotion, Herbert G. Luther, Chas. Pfizer & Co., Inc., Terre Haute, Ind.; Antibiotics in Feeds for Therapy, Dr. Max Harvey, American Cyanamid Co., New York; Poultry Feed as a Method of Anthelmintic Medication, Dr. K. B. Kerr, Dr. Salsbury's Laboratories, Charles City, Iowa; Anthelmintics in Animal Feeds, Dr. Don C. Boughton, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.; Arsenicals in Feeds, Dr. Douglas V. Frost, Abbott Laboratories, Chicago.

Suggested Patterns for Field Evaluation of Medicated Feeds, Drs. O. H. Siegmund and D. E. Fogg, Merck & Co., Inc., Rahway, N.J.; Blending and Assay Problems, F. Howard Hedger, Chas. Pfizer & Co., Inc., Brooklyn; Labeling of Medicated Feeds From the Feed Manufacturer's Point of View, B. L. Gibbs, Hales & Hunter Co., Chicago; Future of Medicated Feeds, W. E. Glennon and W. T. Diamond, American Feed Manufacturers Assn., Chicago; The Analysis of Drugs in Feeds, Dr. R. T. Merwin, Connecticut Agricultural Experiment Station; Problems Related to Drugs in Feeds From the State Control Officials' Standpoint, Dr. Stacy B. Randle, New Jersey State Chemist; Public Health Significance of Drugs in Animal Feeds, Drs. G. M. Briggs and William Gay, National Institutes of Health, Washington.

Manufacture and Quality Control Problems With Medicated Feeds, Dr. Walter A. Glista, Chas. Cox Co., Boston; Design of Premixes and Mixing Problems, Dr. J. F. Mahoney and W. L. Benson, Merck & Co., Rahway, N.J.; The Farmer Looks at Medicated Feeds, Herman C. Aaberg, director of livestock division, American Farm Bureau Federation; The Distribution of Medicated Feeds and Pre-Mixes, Drs. Kern and Fortune, Eli Lilly & Co., Indianapolis; Medicated Feed as an Economic Factor in the Livestock Industry, Dr. Orlin J. Scoville, Agricultural Research Service, USDA.

From FDA—New Drug Status of Medicated Feeds, Dr. Earl L. Meyers, new drug branch; Description of the Facilities and Controls Used for the Manufacture, Processing and Packing of Medicated Feeds, Paul Sanders, new drug branch, and Nathan Ettelstein, new drug branch; Antibiotic Regulations for Medicated Feeds, William Jester, division of antibiotics; Tissue Residues of Drugs From the Use of Medicated Feeds, Dr. Burt Vos, division of pharmacology; Responsibility of Manufacturers for Legal Labeling of Drugs in Animal Feeds, Dr. J. H. Collins, veterinary medical branch.

## Protein Blenders, Inc., Offers Common Stock

IOWA CITY, IOWA—Protein Blenders, Inc., feed manufacturing company, has issued 35,000 shares of new common stock at $7.75 a share, the first public offering of securities by the firm.

C. Urban Kelly, president, said the stock sale will provide $271,250 in new capital.

Protein Blenders' net sales for the fiscal year ended last Sept. 30 totaled $4,255,000, up about $400,000 from the preceding year. Net profit, after taxes and contributions to the firm's profit-sharing trust, totaled $96,000, up 20% from the year before, Mr. Kelly said. Earnings in the latest year were equal to $1.32 a share on common stock, compared with $1.10 the year before and 38¢ two years ago.

Wholly owned subsidiaries of Protein Blenders are English River Concentrates, Inc., Riverside, Iowa, and Hills (Iowa) Grain & Feed, Inc. The firm's headquarters are at Iowa City.

# THE FEED MARKETS

★ ★ ★ ★

## Demand — Supply — Trends — Prices

*Quotations on feed ingredients shown in these and adjoining columns are wholesale prices, per ton, bagged, for prompt delivery, unless otherwise noted. They are the latest quotations available from Feedstuffs correspondents and are not necessarily those in effect on date of publication. The prices represent fair average trading values and do not necessarily represent extreme low or high levels at which individual sales might have occurred. A descriptive summary of supply and demand factors prevalent in the feed market appears on page 2.*

### ALFALFA MEAL

**Minneapolis:** Prices were a shade firmer on regular meal, unchanged on other types of dehydrated. Quotations: 17% dehydrated, 100,000 units of vitamin A guaranteed $54.50@58.50; granules and oil-treated $60.50, bulk $2 less; non-guaranteed $48@48.50; 15% suncured $46.50@47.

**Memphis:** Demand poor; trend higher; supply ample; dehydrated, 17% protein, guaranteed 100,000 units vitamin A $57.30.

**Boston:** Demand fair; supply adequate; dehydrated, 17% $61; suncured 13%, Colorado $55.25; Dakota $50.75.

**Omaha:** Demand fair; supply ample; 17% dehydrated, non A, papers or burlap $46; 17% dehydrated, 100,000 A, papers or burlap $50; No. 1 fine ground suncured $40; No. 1 ¼-in. $36; No. 2 ¼-in. $34.

**Los Angeles:** Demand slow; trend weaker; supply ample; 15% suncured $44.50@46; 17% dehydrated $50@51.

**Cincinnati:** Demand fair; trend steady; supply adequate; 17% dehydrated, 100,000 vitamin A $59.55@64.55; 17% dehydrated, no A $54.55; 13% fine suncured $41@51.

**Philadelphia:** Demand dull; supply fair; 17% dehydrated $62.

**Ft. Worth:** Demand improved; supply adequate; 17% protein, 50,000 A $47, basis f.o.b. Plainview area; northern origin, 100,000 A $57.50@58.60, delivered Ft. Worth.

**Indianapolis:** Demand not too good; trend unchanged; supply ample; 13% $43, 17% $58; suncured $40@45.

**Seattle:** Demand slow; trend easy; supply good; $46 ton, delivered, carlots, 15% protein suncured.

**Kansas City:** Independent offerings of straight run meal have declined materially and the market has made a normal seasonal advance in recent days; trend is firm; blended 17% dehydrated alfalfa meal with 100,000 units vitamin A guaranteed on arrival steady at $54, sacked, Kansas City; straight run guaranteed meal $50@52, sacked, Kansas City; no A guarantee $44@48, sacked, Kansas City; No. 1 fine ground suncured $40, No. 1 ¼-in. $37.50 and No. 2 ¼-in. $35.

**St. Louis:** Demand for dehydrated fair, suncured slow; trend firm; supply of dehydrated limited, suncured adequate; dehydrated, 17%, 100,000 A $54 ton; suncured No. 1 fine ground $43.50 ton.

**Chicago:** Demand slow; supply adequate; 17% dehydrated, with 100,000 units vitamin A guaranteed $52.50@53; 17% with no A guaranteed $49@49.50; 15% dehydrated no A $45.50@46; 13% fine ground suncured $44.50@45.

**Portland:** Demand slow; trend lower; supply ample; 15% suncured $46, delivered Portland; 15% suncured $45, delivered California; dehydrated $55, delivered California.

**Milwaukee:** Demand and supply fair; western dehydrated, 17% with 100,000 A guarantee $56; without $53.

**New Orleans:** Demand light; trend easier; supply adequate; 17% dehydrated, vitamin A guaranteed $56@58; non-guaranteed $52@55, 16% $49@52.

**Buffalo:** Demand and supply fair; trend steady; $70, sacked, Boston.

### ALFALFA PELLETS

**Omaha:** Demand fair; supply ample; 17% dehydrated, 100,000 A $48 bulk, $52 sacked.

### BARLEY FEED

**Indianapolis:** Demand average; trend unchanged; supply sufficient; rolled $66, crimped $62.

**Los Angeles:** Demand fair; trend steady; supply ample; standard rolled $2.93; standard ground **$2.89.**

**Philadelphia:** Demand dull; supply fair; pulverized $46.

**Ogden:** Supply average; rolled $44@49; whole $37@42.

**Seattle:** Demand fair; trend steady; supply good; whole $57 ton, ground $57 ton, rolled $58 ton, all ex-warehouse, l.c.l., sacked.

**Baltimore:** Demand quiet; supply ample; $45.

**Chicago:** Demand quiet; supply ample; $34.

**Boston:** Demand slow; supply adequate; $41.50@45.

**Portland:** Demand good; supply ample; trend unchanged; rolled $58, ground $56.

**New Orleans:** Demand slow; supply ample; trend steady; pulverized $50@52.50.

**San Francisco:** Demand fair; supply ample; rolled $60.50, ground $59.50.

**Milwaukee:** Demand and supply fair; pulverized, white $45, feed $44; needles $39@89¢.

### BENTONITE (SODIUM)

**Chicago:** Demand very good; supply adequate; f.o.b. Wyoming and South Dakota shipping points: granular, 20 mesh $15.50; fine granular, 80 to 100 mesh $13.75; powder, 200 mesh $12.50, f.o.b. Belle Fourche, S.D., minimum 30-ton carlot: 80 granular $13.50 net; 200 mesh fine $12.25 net.

### BLOOD FLOUR

**New Orleans:** Demand dull; trend easier; supply adequate; $85@90, local plants.

**Louisville:** Demand slow; trend weak; supply normal to heavy; $85@90 ton.

### BLOOD MEAL

**Los Angeles:** Demand fair; trend steady; supply ample; $4 a unit of ammonia.

**Cincinnati:** Demand fair; trend steady; supply adequate; $120.

**Ogden:** Supply normal; demand stimulated by wintry weather; $95 ton in 100-lb. bags, f.o.b. Ogden.

**Chicago:** Demand slow; supply adequate; $115@117.50 ton, guaranteed 80% protein.

**Seattle:** Demand slow; trend easy; supply good; $90 ton, f.o.b. local packing plants, l.c.l.

**New Orleans:** Demand dull; trend easier; supply adequate; $85@90, local plants.

**Portland:** Demand slow; supply ample; trend unchanged; $110.

**San Francisco:** Demand slow; supply ample; $5.35 a unit of ammonia; screened $5.25 a unit of ammonia.

**Louisville:** Demand slow; trend weak; supply good; $85@90 ton.

### BONE MEAL

**New Orleans:** Demand dull; trend easier; supply adequate; $75@80.

**San Francisco:** Demand good; supply fair; $58.

**Louisville:** Demand dull; trend weak; supply normal; $70@75.

**Cincinnati:** Demand fair; trend steady; supply adequate; $80@85 ton, sacked, f.o.b. Cincinnati.

**Ft. Worth:** Demand fair; supply sufficient; $55, sacked, f.o.b. Ft. Worth, local manufacture.

**Omaha:** Demand good; supply ample; $80.

### BONE MEAL (STEAMED)

**Los Angeles:** Demand fair; trend steady; supply ample; domestic $59.50.

**Indianapolis:** Demand steady; trend unchanged; supply ample; $78 in sacks, in tons.

**St. Louis:** Demand good; trend firm; supply adequate; $90@92 ton, sacked.

**St. Paul:** Market steady at $72.50, large lots.

**Chicago:** Demand slow; supply adequate; $65@75.

**Seattle:** Demand and trend steady; supply limited; $55 ton, ex-warehouse, l.c.l.

**Ft. Worth:** Demand slow; supply adequate; best quality German production, 72% B.P.L., 14% phosphorus, 31% calcium $76, 100-lb. paper-lined burlaps, f.o.b. Houston.

**Boston:** Demand quiet; supply tight; $90.

**Louisville:** Demand slow; trend weak; supply ample; $75@80 ton.

**New Orleans:** Demand good; supply adequate; trend steady; $82.50@85.

**San Francisco:** Demand good; supply ample; $82.50.

**Buffalo:** Demand good; trend steady; supply ample; $85 ton, sacked.

### BREWERS DRIED GRAINS

**Philadelphia:** Demand dull; supply light; $60.

**Los Angeles:** Demand fair; trend steady; supply ample; $54, f.o.b. Van Nuys.

**Cincinnati:** Demand fair; trend strong; supply adequate; $58@60.50.

**Ft. Worth:** Demand fair; supply very scarce; 24% nominal $61@62, prompt, delivered Ft. Worth.

**St. Louis:** Demand good; trend higher; supply limited; $45 ton, bulk; $50 ton, sacked.

**Chicago:** Demand good; supply tight; 24% $54.50@55.

**Boston:** Demand and supply good; 26% $59; 22% $57.

**Buffalo:** Demand fair; trend steady; supply poor; $53, bulk, Boston.

**Milwaukee:** Demand and supply fair; $54@54.50.

**New Orleans:** Demand good; trend steady; supply ample; 24 to 26% $51@55.

**Louisville:** Demand fair to good; supply ample; $53 ton.

### BREWERS DRIED YEAST

**Louisville:** Demand fair to good; trend steady; supply ample; 10¢ lb.

**San Francisco:** Demand fair; supply good; 10½¢ lb.

**Buffalo:** Demand fair; trend steady; supply ample; $10.50 cwt.

**Chicago:** Demand good; supply limited; 10@11½¢ lb. in carlots; 10¼@12¼¢ l.c.l.

**Milwaukee:** Demand good; supply limited; 10½@11½¢ lb. in carlots; 10¾@12¼¢ l.c.l.

**St. Louis:** Demand good; supply limited; 10¢ lb. in carlots; 10½¢ lb. in 5-ton lots; 11¢ lb. in ton lots; 11⅛@12¢ lb. in less than ton lots.

**Pittsburgh:** Carlots 10¢ lb.; 5-ton lots 11¢; ton lots 11½¢.

**New Orleans:** Carlots 10¢ lb.; 5-ton lots 11¢; ton lots 11½¢.

**Cincinnati:** Carlots 10¢ lb.; 5-ton lots 11¢; ton lots 11½¢.

**New York:** Carlots 9½¢ lb.; 10-ton lots 10¢ lb.; 5-ton lots 10½¢ lb.; ton lots 11¢ lb., f.o.b. New Jersey.

**Los Angeles:** Demand good; supply limited; trend steady; 10¢.

**Boston:** Demand light; supply steady; 11@11½¢ lb.

**Omaha:** Demand good; supply poor; 11½¢ lb., carloads; 12½¢ lb., less than carloads.

### BUTTERMILK-CONDENSED

**Los Angeles:** Demand fair; trend steady; supply ample; 100-lb. drums $6.26; large barrels $4.50.

**Ogden:** Supply average; $4.90, 100-lb. drum.

**Indianapolis:** Demand fair; trend steady; supply ample; 95-lb. drum $3.60; in barrels $3.50 cwt.

**Philadelphia:** Demand quiet; supply fair; $4.25.

**Boston:** Demand quiet; supply fair; 4¢ lb.

**New Orleans:** Demand fair; trend steady; supply adequate; $4@4.25 cwt.

**San Francisco:** Demand fair; supply good; $5.35 cwt.

**Louisville:** Demand fair; trend steady; supply normal; $4.25 cwt.

**Chicago:** Demand steady; supply fair; $3.25@3.50 cwt. in carlots.

### CALCITE CRYSTALS AND FLOUR

(All prices net, including freight and tax)

**New York:** Crystals $12.48, flour $9.42.
**Buffalo:** Crystals $14.20, flour $10.20.
**Toledo:** Crystals $15.77, flour $11.77.
**Boston:** Crystals $14.82, flour $10.62.
**Limecrest, N.J.:** Crystals $9.50, flour $5.50.

### CALCIUM CARBONATE

**Los Angeles:** Demand fair; trend steady; supply ample; meal and flour $10.53 ton, carlots; grits $13.03 ton, carloads.

**Minneapolis:** Plain $16; iodized (⅛ lb. KI per ton) $13.50; iodized-manganesed $15.05.

**Chicago:** Plain $3.55 ton in 100-lb. bags, delivered.

**Seattle:** Demand steady; supply ample; trend unchanged; $14 ton, ex-warehouse, truck lots.

**Cincinnati:** Demand fair; trend steady; supply adequate; $8@9.

### CHARCOAL

**Los Angeles:** Demand slow; supply ample; trend steady; poultry charcoal, oak, 10-lb. bags in ton lots $2.40.

**Boston:** Demand slow; supply light; $95, nominal.

**San Francisco:** Demand steady; supply ample; $59.50.

**Chicago:** Demand quiet; supply limited; poultry charcoal $102 ton in 50-lb. multiwalls.

**New Orleans:** Demand slow; supply light; trend steady; 40-lb. bags oak charcoal $2.40; 50-lb. bags poultry $2.55.

### COCONUT MEAL

**Los Angeles:** Demand fair; trend steady; supply ample; cake, ex-dock, December $69.

**Seattle:** Demand slow; trend easy; supply limited; $70 ton, ex-dock, 30-day shipment from Philippines.

**Portland:** Demand slow; trend lower; supply ample; $71.

**San Francisco:** Demand fair; supply ample; solvent $65, expeller $70.

### COD LIVER OIL (FORTIFIED)

**Dayton:** Trend steady; price per lb. in 55-gal. drums (410 lb): 300 ICU, 1,500 A 19½¢, 2,250 A 20½¢, 3,000 A 21½¢; 600 ICU, 1,500 A 20½¢, f.o.b. Dayton.

**New York:** Trend steady; price per lb. in 55-gal. drums (400 to 420 lb.): 300 ICU, 750 A 16@18¢, 1,500 A 17½@19½¢, 2,250 A 19@22¢, 3,000 A 19½@23¢; 600 ICU, 1,500 A 18@19½¢, 2,250 A 20@22¢, 3,000 A 22@25½¢; f.o.b. Massachusetts, New York, New Jersey or Pennsylvania. Ranges include variance in offerings and f.o.b. shipping points.

**Boston:** Demand slow; supply good; 600 D, 2,250 A 22¢ lb.; 300 D, 2,250 A 21¢; 300 D, 1,500 A 18½¢.

### CONDENSED FISH SOLUBLES

**Los Angeles:** Demand good; supply light; trend steady; 5¢.

**Boston:** Demand active; supply fair; 4¢ lb.

### CORN GERM MEAL

**St. Louis:** Demand slow; trend steady; supply limited; $82 ton bulk, $47 ton in burlap sacks, St. Louis.

### CORN GLUTEN FEED AND MEAL

(All quotations for all cities are sacked basis, bulk basis $5 less)

**Minneapolis:** Feed $49.77, meal $65.77.
**Atlanta:** Feed $56.92, meal $72.92.
**Birmingham:** Feed $55.18, meal $71.18.
**Boston:** Feed $54.15, meal $70.15.
**Chicago:** Feed $44, meal $60.
**Cleveland:** Feed $51.04, meal $67.04.
**Denver:** Feed $53, meal $69.
**Ft. Worth:** Feed $51.50, meal $67.50.
**Indianapolis:** Feed $48.50, meal $64.50.
**Kansas City:** Feed $44, meal $60.
**Louisville:** Feed $50.11, meal $66.11.
**New Orleans:** Feed $52.88, meal $68.88.
**New York:** Feed $53.69, meal $69.69.
**Norfolk:** Feed $53, meal $69.
**Philadelphia:** Feed $53.23, meal $69.23.
**Pittsburgh:** Feed $51.50, meal $67.50.
**St. Louis:** Feed $44, meal $60.

### CORN OIL MEAL

**Cincinnati:** Demand fair; trend steady; supply adequate; $51.85@52.85.

**New Orleans:** Demand poor; trend steady; supply adequate; $52.88@57.88.

**Louisville:** Demand slow; trend steady; supply normal; $51.80 ton.

### COTTONSEED OIL MEAL

**Louisville:** Demand dull; trend steady; supply normal; new process $59.55; old process $63.32 ton.

**San Francisco:** Demand good; supply ample; expeller $64, solvent $63.

**New Orleans:** Demand slow; trend lower; supply ample; 41% old process $70@72.50.

**Buffalo:** Demand poor; trend steady; supply good; $70, sacked, Boston.

**Ogden:** Supply average; 41% $78@83.

**Indianapolis:** Demand fair; trend unchanged; supply ample; $66, 41%, sacked.

**Los Angeles:** Demand slow; supply ample; trend weaker; $61.

**Ft. Worth:** Demand good; offerings light for nearby delivery; carlots, sacked, central and north Texas origin, 41% old process $64@65; solvent, 41% low gossypol, fat added $59@60, delivered Ft. Worth; pellets $2 additional.

**Portland:** Demand slow; trend lower; supply ample; $61, f.o.b. Los Angeles.

**Philadelphia:** Demand fair; supply ample; $67.50.

**Cincinnati:** Demand fair; trend higher; supply adequate; $61.50@64.50.

**Boston:** Demand slow; supply ample; $68@69.

**Omaha:** Demand fair; supply adequate; 41% solvent $68.50, pellets $72.50.

**Memphis:** Demand fair; trend firmer; supply tight; prime 41% protein, old process $66, sacked; new process, 41% solvent $62.50, sacked.

**Wichita:** Demand improved; supply sufficient; 41% $67.

**Seattle:** Demand slow; trend easy; supply good; $72 ton, delivered, carlots, 41% expeller process.

**Kansas City:** Trend stronger with offerings satisfactory; $56@56.50, sacked, Memphis.

**Atlanta:** Demand slow; trend steady; supply ample; 41% $58, sacked, immediate.

**Chicago:** Demand slow; supply plentiful; hydraulic $67.50; solvent $62.50.

### A AND D FEEDING OIL

**Boston:** Demand slow; supply good; 600 D, 1,500 A 17¢ lb.; 300 D, 2,250 A 19¢; 300 D, 1,500 A 16¢; 300 D, 750 A 15¢.

**Buffalo:** Demand steady; supply adequate; 300 D, 750 A 13½¢ lb.; 300 D, 1,500 A 20½¢ lb.; 300 D, 2,250 A 23½¢ lb.; 300 D, 3,000 A 26½¢ lb.; 600 D, 4,000 A 31¢ lb.; straight vitamin A feeding oil 10½@11½¢ per M. U., drum lots, drums included, basis Buffalo.

**Milwaukee:** Demand and supply fair; 85 D, 100 A 18¢; concentrated vitamin oils, 300 D, 750 A 19¢; 300 D, 1,500 A 21¢; 300 D, 2,250 A 23¢.

**Dayton:** Trend steady; price per lb. in 55-gal. drums (410 lb.): 300 ICU, 750 A 18¢; 1,500 A 21¢, f.o.b. Dayton.

**Seattle:** Demand and trend steady; supply ample; 300 D, 2,250 A 22¢ lb., 300 D, 1,500 A 19¢ lb., 300 D, 750 A 17¢ lb., all ex-warehouse, drums included.

**Chicago:** Demand fair to good; supply adequate; straight A feeding oil, with 10,000 units vitamin A per gram 9@10¢ a million units of vitamin A, l.c.l., packed in 55 gal. drums, f.o.b. Chicago; drums included.

**Minneapolis:** All with DPPD—10,000 A 38¢ lb.; 300 D, 2,250 A 20¢ lb.; 300 D, 1,500 A 18¢ lb.; 300 D, 750 A 16¢ lb.

**New York:** Trend steady; price per lb. in 55-gal. drums (400 to 420 lb.): 300 ICU, 750 A 13½@17¢, 1,500 A 15½@19½¢, 2,250 A 17½@21½¢, 3,000 A 19½@21¢; 600 ICU, 1,500 A 16@20½¢, 2,250 A 18@19½¢, 3,000 A 20@25¢; f.o.b. Massachusetts, New York, New Jersey or Pennsylvania. Ranges include variance in offerings and f.o.b. shipping points.

### D ACTIVATED ANIMAL STEROL, POWDERED

**Cincinnati:** Demand poor; trend steady; supply ample; 1,500 ICU 11@12¢; 3,000 ICU 18¢, warehouse.

**Kansas City:** Demand light; trend steady; supply adequate; 10⅝@11¢ lb.

**New York:** Trend steady; price per lb. in 25- and 100-lb. bags or 100-lb. drums: 1,500 ICU 10@13.6¢ bagged, 11@12¢ drums; 3,000 ICU 16@19¢ bagged, 17@18¢ drums, f.o.b. New York and New Jersey.

### DEFLUORINATED PHOSPHATE

**Tupelo, Miss.:** $49.50.
**Houston:** 19% $69.50.
**Wales, Tenn.:** $62.10.
**Coronet, Fla.:** Minimum phosphorus 17%, minimum calcium 34%, maximum fluorine .17% $56 net ton, f.o.b. Coronet in 100-lb. multiwall bags, $54 in bulk; minimum phosphorus 14.5%, minimum calcium 34%, maximum fluorine 0.146% $48 net ton, f.o.b. Coronet, in 100-lb. multiwall bags, $46 in bulk.

### DICALCIUM PHOSPHATE

**Cincinnati:** 18% phosphorus $78@81.50.
**Portland:** Demand slow; supply ample; trend unchanged; $98.
**Minneapolis:** 18.5% phosphorus, 24% calcium granular or fine ground $82.99 ton, delivered; $3 ton less in bulk.
**Trenton, Mich.:** Minimum phosphorus 21%, maximum fluorine .01% guaranteed $84, f.o.b. Trenton, in 100-lb. multiwall bags; minimum phosphorus 18½%, maximum fluorine .01% guaranteed $74, f.o.b. Trenton in 100-lb. multiwall bags.
**East St. Louis:** Monocalcium or dicalcium phosphate, 18½% phosphorus $74 ton, bagged, f.o.b. car.
**Adams, Mass.:** Minimum phosphorus 18½%, minimum 25% calcium, maximum .01% fluorine guaranteed $74 ton, f.o.b. Adams, in 100-lb. multiwall bags. Freight equalized with nearest producing point, carload basis.
**Columbia, Tenn.:** Minimum phosphorus 18½%, minimum 25% calcium, maximum .01% fluorine guaranteed $74 ton, f.o.b. Columbia, in 100-lb. multiwall bags. Freight equalized with nearest producing point, carload basis.
**Bonnie, Fla.:** Demand improving; supply adequate; minimum phosphorus 18½% granular $74. Freight equalized with closest dicalcium phosphate producing point, carload basis.
**St. Louis:** Minimum phosphorus 18½%, maximum fluorine .01% guaranteed $74, f.o.b. St. Louis in 100-lb. multiwall bags.
**Chicago:** Demand fair; supply adequate; stock food grade, 18.5% phosphorus, 20,000 lb. or more $74 net ton in 100-lb. papers, basis Chicago Heights, Ill.; less than 20,000 lb. $79 net ton; 21% phosphorus 20,000 lb. or more $84 net ton, basis Chicago Heights and Nashville, Tenn., less than 20,000 lb. $89 net ton.

### DISTILLERS DRIED GRAINS

**New Orleans:** Demand dull; trend steady; supply adequate; $51@53.
**Philadelphia:** Demand dull; supply fair; $57.
**Louisville:** Demand fair; trend easy; supply ample; bourbon grains, light $50, dark $51, solubles $77.
**Cincinnati:** Demand and supply fair; trend higher; $51@53.
**Boston:** Demand slow; supply good; domestic light $57, dark $59, Canadian $55.
**San Francisco:** Demand fair; supply ample; $57.50; solubles $80.

### DRIED BEET PULP

**Los Angeles:** Demand fair; trend steady; supply ample; $56.47, paper bags.
**Ft. Worth:** Demand slow; supply moderate; carlots, 50-lb. papers $65@66, delivered Ft. Worth, December shipment.
**Ogden:** Supply normal; $45@50 ton.
**San Francisco:** Demand good; supply fair; $50.35.
**New Orleans:** Demand good; trend steady; supply adequate; $58@59.
**Milwaukee:** Demand and supply fair; plain $61.25, molasses $60.75.
**Seattle:** Demand good; trend firm; supply tight; $51 ton, delivered, carlots.
**Atlanta:** Demand fair; trend steady; supply limited; $74.30, sacked, immediate.
**Boston:** Demand active; supply adequate, $66.50.
**Cincinnati:** Demand fair; trend steady; supply adequate; $62@63.

### DRIED BUTTERMILK

**Milwaukee:** Demand and supply fair; 11½@13¢.
**Louisville:** Demand fair; trend steady; supply normal; $11@11.50 cwt.
**Buffalo:** Demand good; trend steady; supply limited; $10.65 cwt.
**San Francisco:** Demand fair; supply ample; $13.75 cwt.
**New Orleans:** Demand slow; supply adequate; trend steady; $11.50@12 cwt.
**Indianapolis:** Demand fair; trend un-

changed; supply ample; $11.50 cwt., sacked.
**Ft. Worth:** Demand fair; supply extremely limited; local production $12 cwt., f.o.b. Ft. Worth.
**Ogden:** Supply average; $5.65, 100-lb. bag.
**Los Angeles:** Demand fair; trend steady; supply ample; $13.75@14.
**Wichita:** Demand slow; supply adequate; $3.25 cwt.
**Minneapolis:** Market steady at $10@10.50 cwt.
**Boston:** Demand fair; supply short; 11¼¢ lb.
**Chicago:** Demand steady; supply adequate; $10.25@10.50 cwt. in carlots.

### DRIED CITRUS PULP

**Los Angeles:** Demand fair; trend steady; supply ample; f.o.b. south California producers' plants: orange $47.50 sacked, $43 bulk.
**Boston:** Demand light; supply good; $59.50@60.
**San Francisco:** Demand good; supply fair; meal $55.
**New Orleans:** Demand good; trend steady; supply limited; $56@58.
**Atlanta:** Demand fair; supplies ample on pulp, limited on meal; trend steady; pulp 249, meal $46.50, sacked, immediate.

### DRIED SKIM MILK

**Milwaukee:** Demand slow; supply fair; 13½@14¢.
**Portland:** Demand slow; supply ample; trend unchanged; $12.50.
**New Orleans:** Demand fair; trend weaker; supply ample; 12@12¼¢ lb.
**Louisville:** Demand fair; trend steady; supply ample; $12@12.50 cwt.
**San Francisco:** Demand and supply fair; 13¼¢ lb.
**Buffalo:** Demand fair; trend steady; supply ample; $11.50 cwt.
**Los Angeles:** Demand fair; trend steady; supply ample; $13.50.
**Cincinnati:** Demand fair; trend steady; supply adequate; 11@12¢.
**Philadelphia:** Demand quiet; supply fair; $13 cwt.
**Minneapolis:** Market steady at $11.50@12 cwt.
**Boston:** Demand fair; supply ample; 12@12¼¢ lb.
**Chicago:** Demand steady; supply adequate; $11.50 cwt. in carlots.

### DRIED WHEY

**Boston:** Demand poor; supply plentiful; 6¢ lb.
**Los Angeles:** Demand fair; trend steady; supply ample; fortified $6.15, unfortified $5.
**Philadelphia:** Demand quiet; supply fair; $6.25.
**Cincinnati:** Demand fair; trend steady; supply adequate; $6.
**Ft. Worth:** Demand fair; supply adequate; carlots, standard $6 cwt., sacked, delivered Ft. Worth or any Texas point or in ton lots, f.o.b. warehouse, Ft. Worth.
**Ogden:** Supply average; $6.90, 100-lb. bag.
**Louisville:** Demand fair; trend steady; supply normal; $6.50 cwt.
**Portland:** Demand dull; trend steady; supply adequate; $6.15@6.25 cwt.
**San Francisco:** Demand steady; supply good; $6 cwt.


**FEED INGREDIENTS**
**Fish Meal • Scrap • Solubles**
*Bigelow Sales Company*
Produce Exchange Building
2 Broadway NEW YORK 4, N. Y.
Tel HAnover 2-9195

**Landby Dehydrating Co.**
**Manufacturers of Dehydrated Alfalfa Meal**
**Established 1940**
**A. J. Landby, Warrpad, Manager**
**Office Phone 87 Res. Phone 153**
**Mill at Swift, Minn.**


**Minneapolis:** Market unchanged at $5.25@5.75 cwt.
**Buffalo:** Demand poor; trend steady; supply fair; $6 cwt.
**Chicago:** Demand steady; supply adequate; $6 cwt. in carlots.
**Kansas City:** Demand fair; trend steady; supply moderate; straight grade $6; partially delactosed $6.50.
**Seattle:** Demand steady; supply ample; trend unchanged; $7 cwt., ex-warehouse, L.c.l.

### FISH MEAL

**Indianapolis:** Demand good; trend steady; supply normal; $172 ton, sacked.
**Ogden:** Supply average; $2.20 a unit, f.o.b. Coast; 65% $171@173.
**Ft. Worth:** Demand fair; supply adequate; Angola 60% $156, f.o.b. cars or trucks, Houston, sacked, 100-lb. burlaps.
**Los Angeles:** Demand good; supply limited; trend steady; $2.30 a unit of protein.
**Cincinnati:** Demand fair; trend steady to easy; supply adequate; $160@165.
**Portland:** Demand slow; trend lower; supply ample; $2.25, f.o.b. Vancouver, $2.35, f.o.b. California.
**San Francisco:** Demand slow; supply ample; $2.35 a unit of protein.
**Milwaukee:** Demand and supply fair; 60% $175.
**New Orleans:** Demand fair; trend easier; supply limited; 60% $154@155.
**Buffalo:** Demand strong; trend steady; supply very scarce; $162 ton, bulk; $165, sacked.
**Boston:** Demand good; supply scarce; $155.
**Minneapolis:** Demand improved this week, with fairly good bookings reported on 70% herring meal, quoted at $2.20 a unit of protein, West Coast; 60% meal $160, Minneapolis.
**Chicago:** Demand easy; supply limited; menhaden fish meal 60% protein, f.o.b. East Coast $155 ton; 60% blended West Coast $140; Northwest herring-salmon blend $140; herring meal 73% protein $2.15 a unit of protein.
**Seattle:** Demand slow; trend steady; supply good; Canadian herring meal $2.30 a unit protein, carlots.
**Atlanta:** Demand fair; trend steady; supply limited; 60% $165, sacked, immediate.

### HAY

**Ft. Worth:** Demand improved for alfalfa, nil for others; supply sufficient; carlots, baled, No. 1 alfalfa $38@40, No. 2 $36@38; prairie No. 2 $28@30; Johnson grass, No. 2 $26@28, delivered.
**Los Angeles:** Demand fair; trend steady; supply ample; U.S. No. 1 $34; U.S. No. 2 leafy $31@33; U.S. No. 2 green $31@33; U.S. No. 2 $25@30.
**New York:** Demand poor for domestic supplies; trend unsteady; supply sufficient; heavy truck shipments of Canadian supplies have depressed domestic timothy prices, with trade interests describing the situation as grave. Canadian supplies have been selling considerably under prices being asked for domestic shipments. Economical marketing of No. 3 domestic timothy was said to be impossible under current conditions. No. 1 $34@36, No. 2 $28@31, No. 3 $24@28.
**Philadelphia:** Demand and supply fair; as to quality $32.
**Cincinnati:** Demand slow; trend steady; supply adequate; No. 1 timothy (new) $21; first cutting No. 1 alfalfa (new) $21; second cutting $25; fancy, No. 1 clover and timothy mixed $27; No. 1 red clover $23; bright wheat or oat straw $14.
**Ogden:** Supply normal; $1.25 bale; $24@30 ton in the barn.
**Wichita:** Demand fair; supply plentiful; prairie $18@23, alfalfa $25@30.
**Boston:** Demand steady; supply plentiful; No. 1 timothy $38@40, No. 2 $35.
**New Orleans:** Demand fair to slow; trend steady; supply plentiful; timothy and clover $27@28; baled alfalfa $30@36; prairie $25@28.
**Buffalo:** Demand steady; No. 2 timothy $15@20, No. 2 alfalfa $25@32; straw $10@14.
**Louisville:** Demand slow; trend steady; supply ample; No. 1 hay, such as timothy, clover, alfalfa or mixed timothy and clover $30, No. 2 $28; lespedeza $25; straw $14@15 ton.
**St. Louis:** Demand fair; supply ample; No. 1 timothy $25@28 ton, No. 1 clover $18@20 ton, No. 1 alfalfa $25@28 ton, No. 1 prairie $23@25 ton, straw $13@14 ton.
**Seattle:** Demand fair; trend firm; supply good; $40 ton, delivered, truck lots for U.S. No. 2 green.

### HOMINY FEED

**Milwaukee:** Demand and supply fair; $47.75.
**Louisville:** Demand fair; trend steady; supply normal; $44.20 ton.
**New Orleans:** Demand fair to good; trend steady to higher; supply limited; $50@53.
**Buffalo:** Demand fair; trend steady to higher; supply poor; $52, bulk, Boston.
**Cincinnati:** Demand poor; trend higher; supply somewhat limited; $48.
**Indianapolis:** Demand fair; trend steady to unchanged; supply ample; $45 ton, including state tags and used bags.
**Boston:** Demand slow; supply ample; $54.50.
**Omaha:** Demand good; supply short; $41 bulk, $46 sacked.
**Memphis:** Demand poor; trend higher; supply ample; white $46, yellow $48.
**Seattle:** Demand slow; trend steady; supply ample; $60 ton, delivered, sacked.
**Kansas City:** No offerings; demand moderate; trend strong; latest car sold at $46, sacked, Kansas City.
**Chicago:** Demand good; supply very limited; $46.50@47.

### LINSEED OIL MEAL

**Louisville:** Demand slow; trend easy; supply normal; new process $75.35 ton; old process $81.35.
**New Orleans:** Demand slow; trend steady; supply adequate; 32% or higher protein $79.50@82.
**San Francisco:** Demand and supply fair; $70.
**Milwaukee:** Demand and supply fair; 34% $75; 36% $68.
**Philadelphia:** Demand and supply fair; 34% $79.
**Ft. Worth:** Demand slow; supply light; carlots, 36% or better $82.82 December, $79.82 February-April, delivered Ft. Worth; pellets $2.50 premium.
**Indianapolis:** Demand fair; trend unchanged; supply ample; new process $78 ton, pellets $75 ton.
**Los Angeles:** Demand slow; trend steady; supply ample; $63.
**Cincinnati:** Demand fair; trend easier; supply adequate; $74.25@79.25.
**Portland:** Demand slow; trend lower; supply ample; $64, f.o.b. Los Angeles.
**Omaha:** Demand fair; supply adequate; 34% expeller $78, pellets $80.50; 36% solvent $72.50, pellets $75.
**Wichita:** Demand fair; supply sufficient; 34% $80.
**Seattle:** Demand slow; trend steady; supply good; $82 ton, delivered, 30% expeller process.
**Kansas City:** Offerings somewhat improved with trend a little lower; $58, bulk, Minneapolis.
**Minneapolis:** The market continues quiet, with sales mostly by resellers. Shipping directions are fair. Quotations: 36% $58@59; 32% flaxseed screenings oil feed $42.50, bulk, Minneapolis.
**Chicago:** Linseed oil meal sales were fair during the week ending Dec. 7, and supplies were good. Since prices were more in line with buyers' views, they were willing to take on additional supplies. Quotations Dec. 7: solvent linseed oil meal $68.50@69; expeller $74@74.50.
**Boston:** Demand slow; supply scarce; $80@84.

### MALT SPROUTS

**Cincinnati:** Demand fair; trend steady; supply adequate; No. 1 $48@49.
**New Orleans:** Demand fair; trend higher; supply scarce; No. 1 $48@49.
**Milwaukee:** Demand and supply fair; $43@45.
**Chicago:** Demand and supply fair; No. 1 $43.
**St. Louis:** Demand good; trend firm; supply ample; No. 1 bulk $36 ton, No. 1 sacked $42 ton, No. 2 sacked $32 ton.

### MEAT SCRAPS

**Milwaukee:** Demand slow; supply good; 50% $70.
**Louisville:** Demand slow; trend very weak; supply heavy; $65@70 ton.
**New Orleans:** Demand fair; trend steady; supply adequate; 50% meat and bone $77@80, local plants.
**San Francisco:** Demand fair; supply good; $1.50 a unit of protein.
**Buffalo:** Demand good; trend higher; supply ample; 50% meat scraps $70 ton, bulk; $72.50, sacked.
**Portland:** Demand slow; trend lower; supply ample; $1.36.
**Los Angeles:** Demand better; smaller offers; trend steady; $1.55 a unit of protein.
**Cincinnati:** Demand fair; trend easy; supply adequate; 50% $62@67 ton, sacked, f.o.b. Cincinnati.
**New York:** Demand good; trend steady; supply sufficient; 50% $67.50, 55% $72.50 bulk; 50% $70, 55% $75 sacked.
**Ft. Worth:** Demand improved; supply ample; meat and bone, 50% $65@67, sacked, f.o.b. or delivered Ft. Worth.
**Ogden:** Market lower; supplies and demand good; $75 ton in 100-lb. bags.
**Wichita:** Demand good; supply inadequate; 50% $72.50, f.o.b. plant; 55%, no quotations, no offerings.
**Omaha:** Demand slow; supply ample; $75.
**Boston:** Demand fair; supply steady; $1.10 a protein unit; converted 50% $67.50.
**St. Paul:** Prices were advanced $2.50, with demand fair and supplies adequate. Quotations: 50% meat and bone scraps $72.50.
**Seattle:** Demand slow; trend easy; supply ample; $70 ton, ex-warehouse, truck lots.
**Kansas City:** Market about steady with demand fair and offerings adequate; 50% meat and bone scraps $65@70, sacked, Kansas City.
**St. Louis:** Demand slow; trend steady; supply ample; 50% $75@78 ton bulk, $79@81 ton in paper sacks, $80@82 ton in burlap sacks.
**Chicago:** Demand slow; supply heavy; 50% protein $62.50@70; 55% $77.

### MILLET

**St. Louis:** Demand fair; trend steady; supply ample; recleaned Early Fortune $3.50 cwt., sacked; recleaned White Proso $3.75@4 cwt., sacked.

### MILLFEED

**Minneapolis:** Market remains about steady, with demand sluggish and offerings not pressing, some eastern demand helped support the market. Quotations: bran $38@39, standard midds. $39@39.50, flour midds. $41.50@42, red dog $42@43.
**Kansas City:** Demand picked up a little toward the middle of the week with offerings fair; bran $36@36.50, sacked, Kansas City; shorts $38.75@39.25, sacked, Kansas City.
**Wichita:** Demand slow; supply sufficient; basis Kansas City, Dec. 6: bran $35.50@36, shorts $39.50@40; both bran and shorts advanced $1 ton, compared with the preceding week.
**Ft. Worth:** Demand active for bran, slow for shorts; supply of bran light, shorts adequate; carlots, burlaps, prompt, wheat bran $44@45, gray shorts $45.50@46.50, delivered Texas common points; $1.50 higher on bran and unchanged on shorts compared with previous week.
**Chicago:** Sales were good during the week ending Dec. 7 and nearby supplies were growing somewhat shorter. Bran and standard midds. advanced $1@1.50. Quotations Dec. 7: bran $42@42.50, standard midds. $42.50@43, flour midds. $46.50@47, red dog $46.50@47.
**Indianapolis:** Demand only fair; trend unchanged; supply ample; soft winter wheat bran $45, standard midds. $49.50, mixed feed $49, gray shorts $48.15.
**Cincinnati:** Demand fair; trend steady to higher; supply adequate; bran $46.50@48, middlings $47@48.50.

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**TERMINAL ELEVATORS:**

Kansas City, St. Louis, Chicago, Buffalo, Omaha, Toledo, Columbus, Fort Worth, Portland, Galveston, Enid, Minneapolis, Norfolk, Nashville, Louisville, Memphis, Houston

**Milwaukee:** Demand slow; supply fair; pure bran $42@42.50, standard midds. $42@42.50.

**Louisville:** Demand fair; trend easy; supply good; bran $46.70, mixed feed $47.70, shorts $48.20, standard midds. $48.85.

**Omaha:** Demand fair; supply ample; bran $36.50, shorts $39.25; standard midds., bulk $36.50.

**Boston:** Demand cautious; supply spotty; bran $52.50@56, middlings $54@56.

**Buffalo:** A revival of mixer demand and curtailed flour mill running time served to bolster bran and middlings prices. Buffalo prices moved above western centers and some eastern buyers entered western markets. Bran and middlings ended $1.50 higher and heavy feeds were unchanged. Bran $47@47.75, standard midds. $48, flour midds. $49@49.75, red dog $49@49.75.

**New York:** Demand good; trend steady; supply sufficient; Buffalo mill operation curtailment caused by the recent storm and holidays and an improved offtake helped millfeeds to stage a good advance; bran $52@52.50, standard midds. $53@53.50.

**Philadelphia:** Demand spotty; supply ample; bran $52, standard midds. $52, red dog $65.

**New Orleans:** Demand fair; trend steady to easier; supply adequate; bran $46@46, shorts $49@49.50.

**Memphis:** Demand moderate; trend higher; supply adequate; wheat bran $43, gray shorts $47, standard midds. $46.

**Seattle:** Demand slow; trend easy; supply good; $44 ton, delivered common transit points, carlots.

**Portland:** Demand slow; trend lower; supply ample; $43.

**Ogden:** Supply normal; to Utah and Idaho: red bran and mill run $42, middlings $47; to Denver: red bran and mill run $49, middlings $54; to California: red bran and mill run $49.50, middlings $54.50, f.o.b. San Francisco and Los Angeles.

**Los Angeles:** Demand fair; trend steady; supply ample; mill run, Utah-Idaho billing, sacked $49@49.50; red bran, delivered CCP, sacked $54@54.50.

**San Francisco:** Demand fair; supply ample; $48; red bran $52.50.

### MINERAL FEED

**Portland:** Demand slow; supply ample; trend unchanged; $42.

**San Francisco:** Demand steady; supply good; all-purpose with iodine $70.

**Indianapolis:** Demand good; trend firm to unchanged; supply ample; $42 ton with iodine.

**Ft. Worth:** Demand fair; supply ample; all purpose granules $80, block $90; mineral phosphorus 5% granules $92, block $102; cattle-sheep mineral, 7% phosphorus granules $99, block $99; hog mineral phosphorus 2½% granules $81; phosphorus 13% $55 (all in 50-lb. paper bags).

**Ogden:** Supply average; wintery weather stimulating demand; $105 ton, 50-lb. blocks; $95 ton, granular, 50-lb. bags.

**Wichita:** Demand good; supply about offsets demand; all-purpose with iodine, 50-lb. blocks $92.50, 100-lb. bags $87.50, f.o.b. plant.

**Sioux City:** 50-lb. mineral blocks, 8.2% phosphorus $92; 7.5% phenothiazine sheep mineral blocks $4 each.

**Seattle:** Demand steady; supply ample; trend unchanged; $65 ton for high phosphorus mixtures; $44 ton for competitive brands.

**Omaha:** Demand good; supply tight; $55 sacked, $95 blocks.

### MOLASSES

**Milwaukee:** Demand fair; supply ample; 10¼¢ gal., New Orleans.

**Louisville:** Demand fair; trend steady; supply ample; 10¼¢ gal., tank car lots, Gulf ports.

**Portland:** Demand slow; supply ample; $22.

**New Orleans:** Demand fair; trend steady; supply adequate; 10¼¢ gal. in tank cars, f.o.b. New Orleans.

**San Francisco:** Demand and supply good; $23 ton, f.o.b. cars, Richmond, Cal.

**Buffalo:** Demand and supply good; trend steady; 14¢ gal., f.o.b. Albany.

**Indianapolis:** Demand good; trend unchanged; supply ample; 10½¢ gal., tank cars, f.o.b. Gulf ports.

**Cincinnati:** Demand fair; trend steady; supply adequate; 10@10¼¢ gal., New Orleans.

**Los Angeles:** Demand good; trend steady; supply ample; $23, f.o.b. tank cars; $23.25, f.o.b. tank trucks, both Los Angeles harbor.

**Ft. Worth:** Demand improving; supply ample; blackstrap 12½¢ gal., f.o.b. Houston; carlots, delivered Ft. Worth, cars and/or truck $28.37, seller's market price on date of shipment; maximum 13½¢, December shipment.

**Beaumont:** Trend steady; blackstrap 11¢ gal., tank cars, tank wagons, f.o.b. Beaumont.

**New York:** Trend steady; blackstrap 12½¢ gal. in tank cars, tank wagons, f.o.b. **Boston:** Demand fair; supply adequate; 13¢ gal. in tank cars; forward shipments 14¢.

**Minneapolis:** Prices were firmer for forward positions, but unchanged for nearby. Quotations: 10¼@10½¢ gal., f.o.b. New Orleans; January-March 11¢ gal.; $23 ton, West Coast.

**Atlanta:** Citrus molasses—demand good; supply limited; trend strong; $19 ton, bulk, f.o.b. Florida producing points, immediate.

**Seattle:** Demand steady; supply good; $23 ton, f.o.b. Seattle, tank car lots.

**Kansas City:** Trend about steady; demand fair to good; offerings adequate; generally 10¼¢ gal., New Orleans, for December shipment.

**Memphis:** Demand fair; trend steady; supply ample; blackstrap 10¼¢ gal., tank car, f.o.b. New Orleans.

### NIACIN

**New York:** Trend firm; $8 kilo, 50-kilo lots; $8.10 kilo, 10-kilo lots; $8.20 kilo, 5-kilo lots; $8.30 kilo, 1-kilo lots; freight prepaid or paid to destination.

### OAT PRODUCTS

**Louisville:** Demand fair; trend steady; supply normal; reground $26.85, rolled oats $82.90, feeding oatmeal $76.90, pulverized white oats $47.40, crimped white oats $64.90.

**New Orleans:** Demand fair; trend steady; supply ample; pulverized white oats $59.50@57, pulverized oats $48@50.50, mixed feed oats $43@45.50.

**Portland:** Demand slow; supply ample; trend unchanged; rolled $62, ground $59, cleaned $63.

**Milwaukee:** Demand and supply fair; pulverized, white $42, feed $40; molasses oat feed $35; regrounds, 3% $16, 5% $18.

**Philadelphia:** Demand dull; supplies light; pulverized white oats $50.50; Canadian oat feed $27.50, domestic $21.

**Los Angeles:** Demand fair; trend steady; supply ample; white pulverized $64.

**Cincinnati:** Demand fair; trend steady; supply adequate; reground oats $20.50@21, pulverized white oats $46@47, rolled oats $84@85.

**Memphis:** Demand poor; supply ample; trend unchanged; 3½% protein, reground oat feed $30.80.

**Boston:** Demand steady; supply adequate; white pulverized $48, ground mixed $41.50, reground oat feed $19.50@20.

**Minneapolis:** Stronger cash oats prices dictated higher prices for some products, while demand remained slow to fair. Quotations: feeding rolled oats $82@83, standard pulverized $41@42.50, feeding oatmeal $68@70, crimped oats $58, reground oat feed $15@18.

**Chicago:** Demand improved; supply adequate; reground oat feed $14.50@15; fine ground feeding oatmeal $70@73; feeding rolled oats $80@83.

**Seattle:** Demand and trend steady; supply good; feed oats $61 ton, ground oats $61 ton, rolled oats $65 ton, all ex-warehouse, l.c.l.

**St. Louis:** Demand fair; trend firm; supply ample; reground oat feed $17 in 100-lb. burlap sacks; pulverized white oats $45 ton, choice $46.

### OYSTER SHELL

**San Francisco:** Demand fair; supply ample; local $15, eastern $26.

**Portland:** Demand slow; supply ample; trend unchanged; western $29, eastern $34; granite and crystal grits, both $25.

**New Orleans:** Demand good; trend steady; supply ample; $16@18.25.

**Los Angeles:** Demand steady; trend firm; supply ample; local $18.25, eastern $26.

**Boston:** Demand and supply steady; in paper $21.44.

**Louisville:** Demand good; trend stronger; supply normal; prices advanced $1; $20.50 ton.

**Seattle:** Demand steady; supply good; trend unchanged; eastern $32 ton, western $28 ton, both ex-warehouse, l.c.l.

### PEANUT OIL MEAL

**Milwaukee:** Demand and supply fair; 26% $51.50; 45% $70.50.

### PEAT MOSS

**San Francisco:** Demand fair; supply ample; $3.35 bale.

**New Orleans:** Demand fair; trend steady; supply adequate; 100-lb. bales German moss $3@3.35.

**Los Angeles:** Demand moderate; trend steady; supply limited; Canadian $3.40, 300-bale lots, delivered California main line points.

**Philadelphia:** Demand fair; supply ample; $2.90, f.o.b. pier.

**Boston:** Demand steady; supply adequate; $2.90@3 bale.

**Chicago:** Demand good; supply ample; $3.65, standard 7½ cu. ft. bale.

### POTASSIUM IODIDE, U.S.P.

**New York:** Trend steady; U.S.P. granular and powder, free flowing powder $1.90 lb. in 200-lb. lots, $1.92 lb. in 100-lb. lots, $1.95 lb. in 25-lb. lots; 90% KI in calcium stearate, calcium carbonate or magnesium carbonate mixtures, $1.51 lb. in 200- and 250-lb. lots, $1.53 lb. in 100-lb. lots, $1.56 lb. in 25-lb. lots, f.o.b. New Jersey; freight prepaid except on 25-lb. lots.

**St. Louis:** Demand fair; trend steady; supply ample; 100% pure potassium iodide, U.S.P., 250-lb. average in drums $1.90, 100-lb. lots in fiber drums $1.92; potassium iodide calcium stearate mixture, 225 lb. in leverpak drums $1.81, 100-lb. lots in fiber drums $1.85.

### RIBOFLAVIN

**New York:** Trend firm; feed grade (in feed supplements): 6¢ grams in 3.63 to 16 gm./lb. mixtures, freight prepaid or paid to destination.

### RICE BY-PRODUCTS

**Los Angeles:** Demand moderate; trend steady; supply ample; bran $53.61, California production, via rail.

**Ft. Worth:** Demand fair; supply very scarce; carlots, rice bran $42@43, prompt shipment, f.o.b. south Texas rice mills; hulls $3@4, f.o.b. mills.

**Memphis:** Demand poor; trend steady; none available; bran $38, sacked, f.o.b. Arkansas points.

**San Francisco:** Demand good; supply fair; bran $55, polish $62.

**New Orleans:** Demand fair; trend easier; supply adequate; bran $43.50@45, Louisiana origin.

**Atlanta:** Demand fair; trend strong; supply limited; bran $50, sacked, immediate.

### SCREENINGS

**New Orleans:** Demand fair; trend steady; supply limited; 3/64 in. grind $39@41.50.

**Buffalo:** Demand and supply fair; trend steady; ground, sacked $33.25, New York, L. & R.; unground, bulk $23.75, New York.

**Cincinnati:** Demand fair; trend steady; supply adequate; Canadian $25; barley $20@21, both bulk, delivered.

**Chicago:** Demand improved; supply plentiful; ground grain screenings $31.25; Canadian, bulk $22.25.

**Minneapolis:** Somewhat better demand was noted as buyers sought January-February supplies; offerings are not heavy. Quotations: country run $18@22, lights $5@15, mediums $15@25, heavies $25@35; Canadian $18, bulk, Duluth; Canadian ground $26, sacked, Duluth; flax screenings $23.

### COTTONSEED OIL MEAL FUTURES

Closing prices of cottonseed oil meal (41% protein) on the Memphis Merchants Exchange in dollars per ton (bulk):

| | Dec. 2 | Dec. 5 | Dec. 6 | Dec. 7 | Dec. 8 |
|---|---|---|---|---|---|
| December | ....@ 47.75 | 48.00@ 48.50 | 49.00@ 49.50 | 49.00@ 49.45 | 49.50@ 50.00 |
| May | 47.00@ 47.25 | 47.25@ 47.50 | 47.00@ 47.50 | 47.00@ 47.50 | 46.90@ 47.25 |
| January | 47.25@ 47.50 | 47.50@ 47.75 | 47.50@ 48.00 | 47.50@ 48.00 | 47.70@ 48.00 |
| March | 47.00@ 47.50 | 47.25@ 47.50 | ....@ .... | 47.15@ 47.25 | 46.95@ 47.25 |
| July | 47.25@ 47.50 | 47.25@ 47.50 | 47.35@ 47.50 | 47.20@ 47.40 | 47.00@ 47.50 |
| October | 47.75@ 48.50 | 47.50@ 49.00 | 47.50@ 49.00 | 47.50@ 48.50 | 47.25@ 48.50 |

### SOYBEAN OIL MEAL FUTURES

Closing prices of soybean oil meal (basis Decatur, Ill.) on the Chicago Board of Trade and on the Memphis Merchants Exchange, in dollars per ton (bulk basis):

**CHICAGO**

| | Dec. 2 | Dec. 5 | Dec. 6 | Dec. 7 | Dec. 8 |
|---|---|---|---|---|---|
| December | 49.45@ 49.50 | ....@ 49.85 | 49.35@ 49.40 | 49.30@ 49.45 | 49.20@ 49.30 |
| January | 50.15@ 50.25 | 50.60@ 50.65 | ....@ 50.00 | 50.00@ 50.10 | ....@ 50.05 |
| March | ....@ 51.20 | 51.35@ 51.40 | ....@ 50.80 | ....@ 50.95 | 51.00@ 51.10 |
| May | 52.25@ 52.35 | 52.50@ 52.60 | 52.00@ 52.10 | 52.05@ 52.15 | 52.00@ 52.15 |
| July | ....@ 52.25 | 52.50@ 52.55 | 52.05@ 52.10 | 52.00@ 52.20 | 52.05@ 52.10 |
| August | 52.10@ 52.20 | 52.30@ 52.45 | 52.00@ 52.05 | 52.00@ 52.05 | 51.95@ 52.05 |
| September | 49.50@ 49.80 | 49.50@ 49.80 | 49.00@ 49.40 | 49.00@ 49.50 | 49.00@ 49.50 |

**MEMPHIS (unrestricted)**

| | Dec. 2 | Dec. 5 | Dec. 6 | Dec. 7 | Dec. 8 |
|---|---|---|---|---|---|
| December | ....@ 49.25 | 49.50@ 49.60 | ....@ 49.40 | 48.90@ 49.25 | 48.80@ 49.00 |
| March | 51.00@ 51.25 | 51.15@ 51.40 | 50.70@ 50.90 | ....@ 50.75 | 50.65@ 50.75 |
| May | ....@ 52.20 | 52.20@ 52.50 | 51.85@ 52.00 | 51.85@ 51.90 | ....@ 51.85 |
| July | 52.10@ 52.25 | 52.10@ 52.45 | 51.80@ 52.00 | 51.90@ 52.00 | 51.85@ 51.90 |
| August | 52.00@ 52.20 | 52.10@ 52.40 | 51.80@ 52.00 | ....@ 51.90 | ....@ 51.85 |
| January | 50.00@ 50.25 | 50.35@ 50.40 | ....@ 49.95 | 49.90@ 50.00 | ....@ 49.80 |
| September | 49.00@ 50.00 | 49.00@ 50.00 | 49.00@ 50.00 | 49.00@ 49.75 | 48.90@ 49.50 |
| October | 48.25@ 49.50 | 48.25@ 49.25 | 48.25@ 49.00 | 48.00@ 48.75 | 47.75@ 48.50 |

### MILLFEED FUTURES

The following is a comparison of settling prices at Kansas City for Dec. 1 and 8:

| Bran— | Dec. 1 | Dec. 8 |
|---|---|---|
| December | $35.90@ 36.00 | $36.65@ 36.90 |
| January | 37.00@ 37.60 | ....@ 37.60 |
| February | 38.60@ 38.75 | 36.60@ 39.00 |
| March | 39.60@ 40.25 | 39.50@ 40.20 |
| April | 40.60@ 41.00 | 40.75@ 41.50 |
| May | 38.00@ 39.00 | 37.75@ 38.50 |
| **Shorts—** | | |
| December | $39.85@ 40.50 | $38.55@ 39.05 |
| January | 40.25@ 40.65 | 39.50@ 40.30 |
| February | 41.00@ 41.50 | ....@ 40.75 |
| March | 42.65@ 43.50 | 42.50@ 43.50 |
| April | 43.75@ 44.50 | 43.75@ 44.75 |
| May | 43.75@ 44.50 | 43.75@ 45.25 |

### SOFT PHOSPHATE WITH COLLOIDAL CLAY

**Chicago:** $22@22.75.
**Kansas City:** $22.15@22.80.
**St. Louis:** $21.40@22.
**Des Moines:** $22.50.
**Philadelphia:** $21.65@22.15.
**Minneapolis:** $23.15@23.85.
**Buffalo:** $22.50@23.10.
**Atlanta:** $18@18.70.
**Memphis:** $19.40@19.95.

### SORGHUMS

**Los Angeles:** Demand slow; supply ample; trend steady; No. 2 milo, delivered CCP, prompt $2.57½@2.60.

**Cincinnati:** Demand fair; trend strong; supply adequate; $2.70.

**Ft. Worth:** Demand good; offerings light; carlots, bulk, No. 2 yellow $2.15@2.20, delivered Texas common points.

### SOYBEAN OIL MEAL

**Ogden:** Supply normal; $105@110.

**Ft. Worth:** Demand fair; supply sufficient; carlots, 44% $70.50@71.50 depending on origin; truck lots $64@65, prompt, delivered Ft. Worth.

**Portland:** Demand slow; supply ample; trend unchanged; December $45.

**Philadelphia:** Demand spotty; supply ample; $48.50, bulk, Decatur.

**Los Angeles:** Demand better; supply ample; trend steady; delivered CCP $78.07@78.57.

**Cincinnati:** Demand poor; trend steady; supply adequate; $46@49, bulk, Decatur.

**San Francisco:** Demand fair; supply ample; $77.57.

**Atlanta:** Demand slow; trend weak; supply ample; 44% $67.50, sacked, immediate.


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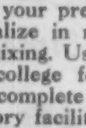

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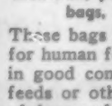

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**Kansas City:** Last week's advance in the price seems to have held with a minor upturn added to that; demand fair to good; offerings about adequate; trend steady; $48@48.50, bulk, Decatur, for Kansas City and West; $50.50@51, bulk, Decatur, unrestricted.

**New Orleans:** Demand slow; trend lower; supply ample; 40% $70@72.50.

**Milwaukee:** Demand and supply fair; 41% $66@66.50; 44% $64.50.

**Boston:** Demand improved; supply adequate; $49.50, f.o.b. Decatur.

**Omaha:** Demand fair; supply adequate; 44% solvent $63.50; 41% expeller $66.50, pellets $69.

**Memphis:** Demand fair; trend steady; supply ample; prime 44% solvent $56.50, sacked, f.o.b. Arkansas points.

**Wichita:** Demand slow; supply sufficient; 44% $55, f.o.b. Wichita.

**Decatur:** Demand fair; supply adequate; 44% bulk, unrestricted $50@50.50.

**Louisville:** Demand fair; trend stronger; supply ample; $61.80.

**Seattle:** Demand slow; trend easy; supply ample; $78.50 ton, delivered, sacked, carlots, nearby shipment.

**Chicago:** Soybean oil meal sales were much improved during the week ending Dec. 7. Supplies were adequate. A little better feed business caused an increase in meal sales. Quotations Dec. 7: 44% protein soybean oil meal, unrestricted shipment $59@59.50.

**Minneapolis:** Market quiet, with prices a shade stronger; $44@46, bulk, Decatur.

### SUNFLOWER SEED

**St. Louis:** Demand fair; trend firm; supply ample; large black $17.50 cwt., large gray $17 cwt., medium black $15 cwt., medium gray $14.50 cwt., small black and gray $10 cwt.

### TANKAGE

**Kansas City:** 60% digester $70@73, sacked, Kansas City.

**St. Louis:** Demand slow; trend steady; supply ample; 60% $77.50@80 ton bulk, $81.50@84 ton in paper sacks, $82.50@85 ton in burlap sacks.

**Chicago:** Demand slow; supply heavy; 60% protein $62.50@70.

**Wichita:** Demand good; supply inadequate; 60% $72.50, f.o.b. plant.

**Omaha:** Demand slow; supply ample; $75.

**Ft. Worth:** Demand improved; supply moderate; 60% digester $77.50@80, Ft. Worth.

**Cincinnati:** Demand fair; trend steady; supply adequate; 60% digester $65@70.

**Los Angeles:** Demand fair; trend steady; supply ample; $1.40 a unit of protein.

**Milwaukee:** Demand slow; supply good; 60% $72.50.

**New Orleans:** Demand poor; supply ample; trend steady; 60% $77.50@82.50.

**Louisville:** Demand dull; trend weak; supply heavy; $70@75 ton.

**St. Paul:** Market steady; demand fair; 60% digester $62.

### WHEAT GERM MEAL

**Buffalo:** Demand and supply fair; trend steady to lower; commercial grade $66, sacked, f.o.b. Buffalo.

**New Orleans:** Demand fair; trend easier; supply adequate; $61@67.

**Chicago:** Market steady at $63.

### NEW PHONE NUMBER

CLEVELAND—A new phone number is announced by the Cleveland office of Meldrum & Fewsmith, Inc., advertising agency. The new number is CHerry 1-2141. In making the announcement, the agency points out that this is its 25th year, and the number is being changed to increase its switchboard capacity.

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Holland, Michigan

## Oil Meal Futures Gain at Memphis

MEMPHIS, TENN. — Substantial gains were scored on the Memphis Board of Trade last week by protein oil meal futures. Volume of trading activity improved with the price.

The higher prices were traced to encouragement that sprang from the absence of expected deliveries against the current December delivery. December paced the advance with gains ranging to $2.75 ton.

Also considered a bullish factor last week was the U.S. Census Bureau report on soybeans and its products, indicating higher production than a year ago but smaller stocks of meal on hand. This pointed toward an increase in consumption. The feed business was considered improved last week as a result of the cold weather. Cash demand also was better.

The week saw trade interests switching hedges in the December option forward and speculative longs reversing the operation. Fair selling in the deferred months was thought to be for processor account. Support was lent these options by commission house and professional buying, dealers said.

There was a renewal of spreading activity against the cottonseed oil meal market in the March forward positions.

Final unrestricted soybean oil meal prices last week were 75¢ to $2.25 ton higher. Sales amounted to 35,200 tons as against 33,000 tons a week earlier. While December liquidation was very heavy, open interest declined only 34 contracts.

Closing Eastern Trunk Line soybean oil meal prices were 75¢ to $2.75 ton higher and sales amounted to 5,400 tons as compared to 3,400 tons a week earlier. Open interest lost 37 contracts.

## FEED RATIOS

(Continued from page 1)

farmers in the month ending Nov. 15 were lower for every kind of formula feed than a month earlier, according to USDA figures. Here are the November figures with the previous month and year-ago figures in parentheses, in that order: laying mash $4.38 ($4.47 and $4.76); broiler growing mash $4.77 ($4.88 and $5.17); mixed feed under 29% protein $3.62 ($3.65 and $3.89); mixed dairy feed over 29% protein $4.30 ($4.40 and $4.78).

Most feed items, except hay, registered price declines during the month. The mid-November feed price index at 199 was 1% less than a month earlier, 14% below the 1947-49 average and the lowest since February, 1950. High protein feeds, especially soybean meal and meat scrap, down 25¢ and 18¢ cwt., respectively, led the price drops from Oct. 15 to Nov. 15. Compared with November, 1954, prices of most high protein feeds were down 70¢ to $1, hay was down about $3 ton and most grain by-product feeds were down 15¢ to 50¢, USDA reports.

Declines in hog and cattle prices were largely responsible for a 10% drop in the meat animal index during the month. At 216% of its 1910-1914 average, this index was 17% less than a year earlier and the lowest for the month since 1945. Along with the big drop in hog prices, beef cattle prices averaged $14.10, down $1.20 from mid-October and the lowest since September, 1946. Calf prices were down $1.10, while lamb and sheep prices were off slightly.

Smaller than seasonal increases in prices received by farmers for milk sold at wholesale to plants and dealers and for butterfat in cream raised the index 1% from mid-October to mid-November. At 267 on Nov. 15, this index was 1 point higher than a year earlier.

## DR. GUS

(Continued from page 1)

kind in cattle, removes a barrier that will advance nutrition research many years.

The new technique lets scientists make a more valuable analysis of the feed further down the digestive tract than did the rumen fistula—first worked with at Michigan State in 1928. It's a plastic window in the paunch (rumen) of a dairy animal that allows the researchers to examine the contents of the rumen.

Gus' operation will help scientists tell how much of the feed a dairy cow consumes is absorbed through the walls of the four stomachs before it reaches the intestines. They will be able to tell what's best to help digest fiber. They will be able to study just how much the microbes of the rumen have to do with digestion. Researchers had their first clue on the role of microbes in digestion by analyzing the contents of the first stomach—the rumen.

The Michigan scientists point out that now they can study two phases of the digestion of dairy animals—what happens to the feed when it gets to the rumen and then after it is processed by the other three stomachs. The purpose is to find better and cheaper rations for dairy cows.

How is Dr. Gus taking this scientific work? He's thriving and gaining weight normally.

### RETIRED FEED MAN DIES

ST. LOUIS—Albert J. Cordes, 71, owner of a feed, hay and grain business here for 30 years prior to his retirement in 1941, died here recently.

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# Chicks Placed in Principal Broiler Areas

(000's omitted)

| Week ending: | Maine | Conn. | Penna. | Ind. | Ill. | Mo. | Del. | Md. |
|---|---|---|---|---|---|---|---|---|
| Oct. 1 | 672 | 481 | 560 | 656 | 203 | 498 | 1,258 | 1,030 |
| Oct. 8 | 712 | 502 | 568 | 603 | 204 | 461 | 1,331 | 1,141 |
| Oct. 15 | 651 | 563 | 603 | 601 | 164 | 391 | 1,400 | 1,090 |
| Oct. 22 | 676 | 562 | 582 | 656 | 174 | 376 | 1,426 | 1,172 |
| Oct. 29 | 755 | 545 | 671 | 694 | 166 | 351 | 1,367 | 1,157 |
| Nov. 5 | 764 | 577 | 625 | 771 | 130 | 428 | 1,295 | 1,109 |
| Nov. 12 | 719 | 465 | 617 | 756 | 135 | 467 | 1,326 | 1,156 |
| Nov. 19 | 724 | 626 | 699 | 808 | 206 | 494 | 1,350 | 1,152 |
| Nov. 26 | 731 | 484 | 594 | 787 | 175 | 543 | 1,468 | 1,091 |
| Dec. 3 | 650 | 593 | 542 | 734 | 180 | 571 | 1,194 | 1,312 |

| Week ending: | Va. | W. Va. | No. Car. | So. Car. | Ga. | Fla. | Ala. | Miss. |
|---|---|---|---|---|---|---|---|---|
| Oct. 1 | 945 | 474 | 1,276 | 183 | 3,266 | 166 | 1,011 | 705 |
| Oct. 8 | 987 | 478 | 1,150 | 220 | 3,334 | 152 | 1,002 | 704 |
| Oct. 15 | 909 | 352 | 1,306 | 248 | 3,334 | 157 | 1,019 | 696 |
| Oct. 22 | 936 | 294 | 1,218 | 223 | 3,532 | 179 | 1,035 | 767 |
| Oct. 29 | 1,028 | 272 | 1,246 | 224 | 3,382 | 187 | 1,056 | 872 |
| Nov. 5 | 1,026 | 536 | 1,291 | 224 | 3,166 | 195 | 1,143 | 865 |
| Nov. 12 | 1,066 | 429 | 1,231 | 207 | 3,402 | 171 | 1,188 | 787 |
| Nov. 19 | 1,092 | 400 | 1,347 | 192 | 3,223 | 206 | 1,280 | 756 |
| Nov. 26 | 988 | 403 | 1,282 | 218 | 3,396 | 165 | 1,269 | 966 |
| Dec. 3 | 1,087 | 423 | 1,464 | 226 | 3,462 | 219 | 1,336 | 870 |

| Week ending: | Ark. | La. | Texas | Wash. | Oregon | Calif. | Total 22 areas 1955 | 1954 |
|---|---|---|---|---|---|---|---|---|
| Oct. 1 | 1,366 | 228 | 1,548 | 141 | 117 | 845 | 17,679 | |
| Oct. 8 | 1,471 | 227 | 1,567 | 99 | 117 | 862 | 17,897 | |
| Oct. 15 | 1,536 | 251 | 1,700 | 121 | 93 | 864 | 18,049 | 14,366 |
| Oct. 22 | 1,564 | 283 | 1,705 | 163 | 68 | 796 | 18,476 | 14,222 |
| Oct. 29 | 1,460 | 253 | 1,638 | 130 | 94 | 923 | 18,611 | 14,546 |
| Nov. 5 | 1,495 | 310 | 1,745 | 140 | 92 | 921 | 18,866 | 14,723 |
| Nov. 12 | 1,592 | 276 | 1,715 | 194 | 101 | 886 | 18,876 | 15,043 |
| Nov. 19 | 1,750 | 295 | 1,764 | 183 | 113 | 914 | 19,474 | 15,883 |
| Nov. 26 | 1,707 | 310 | 1,748 | 164 | 93 | 879 | 19,431 | 15,471 |
| Dec. 3 | 1,859 | 288 | 1,748 | 174 | 150 | 1,002 | 20,075 | 15,849 |

**COMPARABLE 13 AREA TOTALS*—CHICKS PLACED** (000's omitted)

| | Oct. 29 | Nov. 5 | Nov. 12 | Nov. 19 | Nov. 26 | Dec. 3 |
|---|---|---|---|---|---|---|
| 1955 | 14,915 | 14,978 | 14,886 | 15,131 | 15,253 | 15,645 |
| 1954 | 11,659 | 11,674 | 11,722 | 12,618 | 12,193 | 12,469 |

*Former reporting areas of Maine, Connecticut, Delmarva, Shenandoah Valley, Virginia-West Virginia, Alabama, North Carolina, Georgia, Texas, Florida, Mississippi, Indiana, California and Oregon.

## Production of Millfeed Shows Gain

Production of millfeed in tons for week ending Dec. 2, and prior two weeks, together with season total of (1) principal mills in Nebraska, Kansas and Oklahoma and the cities of Kansas City and St. Joseph; (2) principal mills of Minnesota, Iowa, North and South Dakota and Montana, including Minneapolis, St. Paul and Duluth-Superior; (3) mills of Buffalo, N.Y. Production computed on the basis of 72% flour extraction.

| | Southwest* Weekly production | Southwest* Crop year to date | Northwest* Weekly production | Northwest* Crop year to date | Buffalo† Weekly production | Buffalo† Crop year to date | Combined** Weekly production | Combined** Crop yr. to date |
|---|---|---|---|---|---|---|---|---|
| Nov. 28-Dec. 3 | 25,307 | 566,192 | 13,236 | 306,276 | 9,885 | 184,056 | 48,428 | 1,056,524 |
| Prev. week | ‡23,396 | | ‡12,032 | | 10,402 | | ‡45,830 | |
| Two wks. ago | 26,841 | | 15,127 | | 11,664 | | 53,632 | |
| 1954 | 27,065 | 558,375 | 13,541 | 301,458 | 11,260 | 238,294 | 51,866 | 1,098,127 |
| 1953 | 23,487 | 542,186 | 14,757 | 326,394 | 10,519 | 230,297 | 48,763 | 1,097,877 |
| 1952 | 24,098 | 571,900 | 14,463 | 347,402 | 10,722 | 236,133 | 49,284 | 1,254,436 |
| 1951 | 26,002 | 578,844 | 15,018 | 229,328 | 10,160 | 226,240 | 51,180 | 1,024,412 |

*Principal mills. **74% of total capacity. †All mills. ‡Revised.

## ILLINOIS CATTLE EXPERIMENTS

(Continued from page 7)

the gains cost 2% more. Neither the pasture nor the drylot feeding contributed significantly to this difference, the Illinois researchers said.

When the data were pooled for the entire 210 days, stilbestrol feeding resulted in an increase of 6% in daily gain and a saving of 3.1% in feed cost without any apparent change in on-foot grade. The smaller response to stilbestrol in this test than in others might be attributed to the shorter period in which it was fed or the use of good quality legume hay or pasture throughout the test, the Illinois scientists said.

### Ration Pelleted

At the Dixon Springs Experiment Station, scientists made a comparison of feeding a ration as pellets and as a meal to yearling steers. Lot 1 received a ration of ground ear corn (65%), molasses (5%), soybean meal (10%), and ground hay (20%), which was pelleted and self-fed. The steers also got 12 lb. of corn silage daily. Lot 2 received the same ration but self-fed as meal. The ration for Lot 3 was the same as for Lot 2 except that hay was fed long in a separate feeder with molasses spread on hay. The feed was hand-fed as meal. Lot 4 received the same ration as Lot 2 except that ground ear corn was reduced to 60% and molasses was increased to 10%. The feed was self-fed as meal. The test period was 130 days.

Steers in Lot 1 on pellets gained 22 lb. per head more on 227 lb. less feed than those in Lot 2. Lot 1 steers made 100 lb. of gain on 729 lb. of feed while those in Lot 2 required 845 lb. Cost of feed per cwt. of gain was $16.86 for the pellet-fed lot compared with $19.29 for the steers on meal. The selling price was slightly more in Lot 1, although dressing percentage was the same and carcass grades were about equal. Gross returns per steer were about $8 greater in the pellet-fed lot. On the basis of performance, $6.39 per ton may be allowed for pelleting to equalize returns in the two lots, the Illinois researchers said.

Little difference in efficiency was noted between Lot 2 and Lot 3, where self-feeding the complete dry ration was compared with hand-feeding. Some difference in return was noted as a result of a 50¢ difference in selling price. Lot 4, where molasses replaced 5% of ground ear corn, lost some efficiency compared with Lot 2. However, a higher selling price and greater dressing percentage for Lot 4 offset this loss in efficiency.

### Dried Sewage Sludge

Illinois researchers also conducted a test, along with nitrogen-balance studies, to determine whether dried sewage sludge can be substituted for a substantial portion of the ordinary protein supplement used in beef cattle rations. Dried sewage sludge contains about 30% of protein equivalent, much of which is in non-protein nitrogen form.

Conventional growing and fattening rations containing soybean meal were compared with a similar ration in which two thirds of the soybean meal was replaced with dried sludge. The supplements were balanced with respect to protein equivalent content by adjusting the soybean meal level.

Two lots were equal-fed these two growing rations for 56 days. Daily gains in the soybean meal and dried sludge lots were .79 and .75 lb., respectively. The two lots were then full-fed, ad libitum, fattening type rations containing the two supplements for 28 days. Daily gains were 2.25 and 1.28 lb., respectively. Greater palatability of the soy ration was believed to be responsible for the differences in the ad libitum phase as the lot fed soybean meal consumed 15% more concentrates.

The researchers concluded: (1) Dried sewage sludge was not so palatable as soybean meal when used as a partial nitrogen supplement. (2) Dried sewage sludge caused steers to scour during the feeding period. (3) It can be used as a partial substitute for soybean meal in conventional growing rations. (4) Steers fed dried sludge showed no carcass damage. (5) The high mineral content of sludge had no adverse effect on carotene absorption. (6) According to the nitrogen balance technique, sewage sludge used a substitute for two thirds of the supplemental protein was as well utilized as soybean meal.

### Finishing Steers

Drs. A. L. Neumann and W. W. Albert reported on a comparison of pasture vs. drylot finishing of steers that had been full-fed on pasture during the summer. The steers weighed about 980 lb. at the start of the test. One lot remained on pasture and the other was brought into drylot. During the 56-day feeding period, both lots were fed ground shelled corn and 1 lb. of protein concentrate, and the steers in drylot were fed about 5 lb. of alfalfa hay daily. Each lot was divided into a stilbestrol and non-stilbestrol - supplemented group, but the steers were so allotted and the data so pooled that this within-lot treatment difference was not a factor in results.

Concentrate intake was 6% lower in the pasture lot, and gains were 12% slower. Average daily gain was 1.88 lb. for the pasture lot and 2.15 lb. for the drylot steers. The gains of the pasture steers were 8% more expensive even though no hay was fed and less concentrates were consumed. It was estimated that the drylot steers would have outsold the pasture steers by 50-75¢ cwt. The drylot steers appeared to be a little more highly finished. It was also estimated that the pasture steers would have shrunk 1 to 2% more if both lots had been shipped immediately off pasture or from drylot.

A net return of at least $12 more per head would have been realized from finishing the steers in drylot. This difference would far more than offset the extra labor cost involved.

The Illinois station also tested methods of grinding shelled corn for fattening beef steers. A hammermill and a burr mill were used to grind the corn. The results, it was reported, confirmed earlier work showing that when steers are allowed to choose between corn prepared in different ways, they show no measurable preference. Their performances likewise show no difference.

## Agricultural Credit to Be Discussed at Denver

WASHINGTON — Ezra Taft Benson, secretary of agriculture, announced recently that he has invited ranchers, farmers, and congressional and agricultural leaders in Colorado to meet with U.S. Department of Agriculture credit officials at the Shirley-Savoy Hotel in Denver Dec. 16 to discuss agricultural credit needs in the area. The meeting will begin at 9 a.m.

"This is another step in our efforts to get full and up-to-date information on the current agricultural situation and to obtain first-hand from farmers and ranchers their ideas regarding measures needed to solve farm problems," the secretary said.

Senators Eugene D. Millikin and Gordon L. Allott and other members of the Colorado congressional delegation, Gov. Ed C. Johnson, farm organization leaders, bankers, Farm Credit Administration officials and other agricultural leaders have been invited to attend the meeting.

Mr. Benson will be represented by a member of his policy staff, Kenneth L. Scott, director of Credit Services, and by R. B. McLeaish, administrator of the Farmers Home Administration.

The extent to which private, cooperative and the supplemental federal credit facilities are meeting the needs of Colorado farmers and ranchers will be discussed.

## L. N. Gilmore Named Vice President

BUFFALO—Dr. L. N. Gilmore has been appointed a vice president of the Maritime Milling Co., Bruce K. Conover, Jr., executive vice president, announced recently.

Dr. Gilmore will continue as the company's director of research and nutrition.

He has been with Maritime since 1925, having joined the company at that time after 10 years as professor of poultry and dairy husbandry at Syracuse University.

## MARKETS

(Continued from page 2)

steady at about the levels of recent weeks. This is expected to remain the pattern through the balance of this month, as dealers cut their inventories for tax purposes and farmers continue to use their plentiful supplies of home-grown feeds.

But a favorable situation was noted this week in the reported sharply increasing consumer demand for broilers. With the area industrial situation more favorable than ever before and workers' incomes at an all-time high, it is expected that upcoming holiday demand for poultry will break all records. While the current movement of poultry to processing plants is very heavy, it is said that area farmers are actively replacing these birds with substantial purchases of baby chicks, thus indicating their belief that sales will continue profitable during the late winter.

For the first time in two months, formula feed prices advanced this week, being up 50¢@$1 ton. Production was being maintained at a steady pace on a one-shift, five-day basis, with this schedule expected to continue through the remainder of this month.

### Central States

Formula feed demand continued steady in the central states during the week ending Dec. 7, but manufacturers were hoping for more business in the near future. It was still the opinion of most mills that feeders, due to poor returns on their animals, were not purchasing any great amounts of formula feeds.

A little colder weather in the area during the period stimulated sales somewhat, but not to any great extent. It was generally thought that very cold and wintry weather would have to prevail for several weeks in order to really stimulate any large amount of business.

Prices for formula feeds firmed up somewhat and even went 50¢ ton higher. It was thought prices would be a little higher next week also. Cattle feeds were beginning to move in better volume, and laying mashes were moving well. However, hog feeds remained slow due to depressed hog prices.

Most mills continued to run five days and in a few cases, four days.

### Pacific Northwest

The feed industry in the Pacific Northwest was quiet again during the week, with ingredient prices still sagging, particularly the proteins, and with little or no buying interest at any level.

Meatscrap is the cheapest of the proteins, being about $1.40 a unit of protein, but there is selling pressure all down the line, and resale cars of soybean meal continue to keep price levels of this commodity under a cloud, so to speak. Beet pulp is the only commodity on the ingredient list which shows strength, and this is due to good cattle feeding demand and relatively light production. Barley and oats were steady, but millfeeed was weak, and there was no new export business in sight to stimulate the market.

Turkeys have for the most part gone to market, and breeder rations

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are being featured on feed lists. Broiler production should pick up after the turn of the year, and milk checks are quite satisfactory, with a raise to dairymen becoming effective the middle of the month. Pastures are through for the season, but feeders are looking for the least expensive ingredients, such as processed screenings and off-grade grains which will not qualify for loans. These cheap ingredients, plus saggy markets, discourage trading at either a wholesale or retail level and, of course, shrink the volume of standard formula feeds.

Mill price lists dropped about $2 ton during the week, and even this decline failed to stimulate business to any noticeable extent. Weather conditions are fairly good, and about normal for this time of the year.

## Northeast

There was more interest shown last week in dairy feeds, particularly the types that can be mixed with grains on the farm, and formula feed sales in general were slightly above the preceding week.

The firmer market structure also attracted consumers who bought as a hedge against higher prices.

Egg mashes continued to do well but broiler feeds were slow and turkey feeds are practically out of the picture.

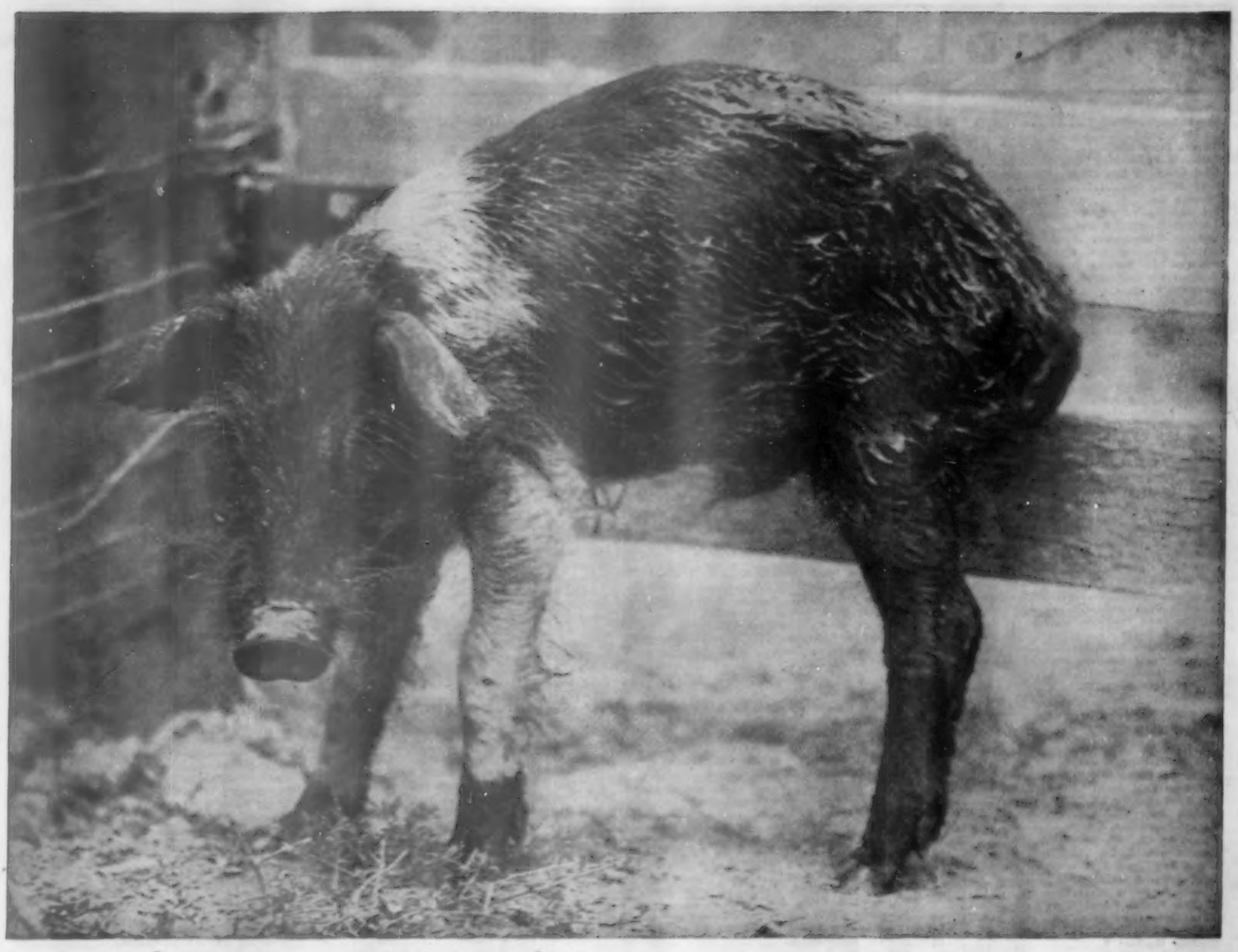
Broiler prices were off 1@2¢, but despite the easiness in the market replacements are running ahead of a year ago. Egg prices were firm and slightly higher.

Cash corn was the strongest commodity during the week and advanced 6@7¢ on light receipts and offerings. The strength of corn helped to bolster the undertone of the rest of the ingredient market.

Oats held steady. Barley was firm and up 2¢. Feed wheat was offered at various prices. Canadian offerings of feed wheat were unchanged at lake ports. There were some ex-lake offerings that might attract buyers, but they were above Canadian levels on a seaboard basis.

Brewers grains moved $1 higher. Distillers grains, gluten feed, gluten meal and alfalfa meal were unchanged. Hominy meal held steady. Soybean meal rose $1 and cottonseed oil meal gained in sympathy. Linseed oil meal was unchanged. Fish meal continued strong but prices were unchanged. Meat scraps and tankage advanced $2@2.50.

Millfeeds had a better undertone. Bran and middling prices increased under the influence of a pick-up in demand from medium and large mixers and curtailed flour mill running time. The improved demand appeared to be centered solely in the East, and prices here were above western points. Some eastern buyers entered the western market but not in sufficient numbers to raise their prices to eastern levels. Bran and middlings ended $1.50 higher, and heavy feeds were unchanged.



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